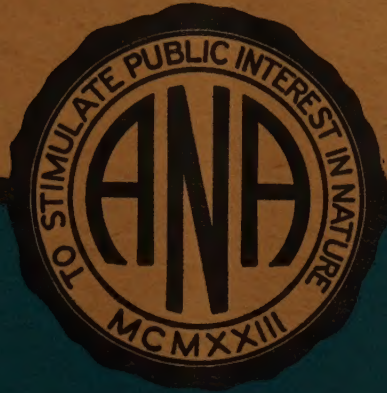


NATURE MAGAZINE

VOL. 24, NO. 5 • 35c



NOVEMBER • 1934

CHIMNEY WITCHES

Mark F. Emerson

GRANDFATHER OF THE PINES

Alma Chesnut

WHITE CORSAIR OF THE ARCTIC

John Lindsey Blackford

IS THE COAST OF NEW JERSEY SINKING?

Horace G. Richards

THE TWENTY BRIGHTEST STARS

Isabel M. Lewis

UNDER THE TURTLE SHELL

H. H. Schwardt

NATURE MAGAZINE



PUBLISHED BY THE AMERICAN NATURE ASSOCIATION
To Stimulate Public Interest in Every Phase of Nature and the Out-Of-Doors, and
Devoted to the Practical Conservation of the Great Natural Resources of America

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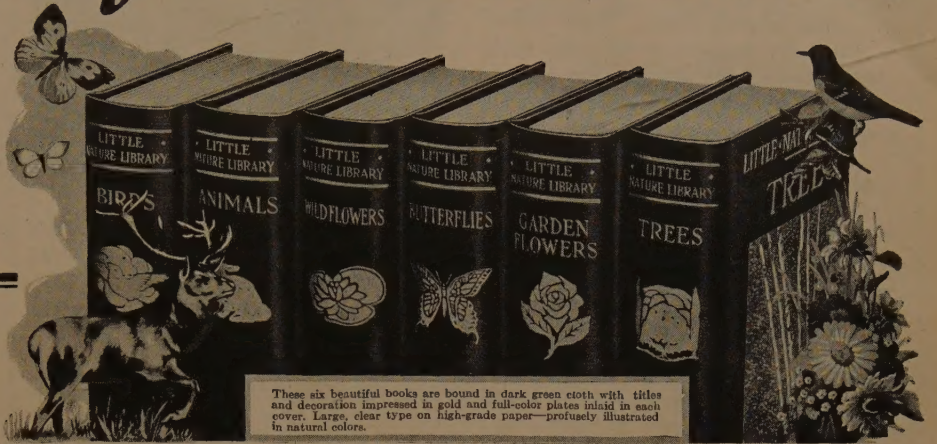
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Photographic Notes

BY SAMUEL BROWN

The photographic section of NATURE MAGAZINE is designed to be of service to its readers interested in photography, in particular Nature photography. All are invited to submit any problems or questions, which will be handled with dispatch. Any suggestions with respect to the conduct of this department will be welcomed by the editor.

We are aware that, to the naturalist, an intensive study of those problems outside the realm of his own scientific pursuit is somewhat distasteful. Technical and economic problems that do not run parallel with the natural sciences are often the most perplexing and annoying.

One of the most valuable instruments the naturalist has at his disposal is the camera. For reproductive possibilities and scientific accuracy it is without peer. It follows then that the logical duty of every ardent student of Nature is to acquaint himself with the use of this precision instrument.

However, the alleged prohibitive cost of equipment and the varieties of lenses, films, shutters, tripods, developers, etc., make it seem a confusing mess. It is the purpose of this page to minimize this confusion and to this end it is dedicated.

Film

Have you ever compared your mental picture of the multicolored strata of the Colorado canyons with the photographic record that your camera has made for you; or the beauty you tried to retain from that seen at the flower show; or the exquisite tones of a summer sunrise or sunset? Your efforts to equal professional reproductions of color, scenes and subjects have probably met with only too frequent disappointment. All these could have been avoided if the broad possibilities of the various modern films were realized.

On the market today, you will find any number of emulsions. All these may, roughly, be placed into three classes. These are:

1—COLOR BLIND. This type of film may be used only when contrast is to be desired rather than correct tones and delicate gradation. All of the *process* and some *commercial* film fall into this group.

2—ORTHOCHROMATIC. Of all available films, this is the group that is most frequently favored. The reasons are obvious. It is a fast film; it can be comfortably developed in a ruby safelight and what is probably of more importance to the present reader is the fact that it is sensitive to the *yellow-greens* which are so often encountered in nature. Plenachrome, Verichrome and Superchrome are of this type.

3—PANCHROMATIC. This film, when properly used corrects the *one* fault of the orthochromatic type—it is sensitive to reds. In addition to this it also gives a truer rendering of the blues and greens, and of the three groups has, by far, the greatest speed.



A TAN AND BLACK BUTTERFLY ON PINK BLOSSOMS. THE PHOTOGRAPH WAS TAKEN AT F. 4.5, 1/50 SECOND ON PANCHROMATIC FILM WITH AN AMBER CELLOPHANE FILTER

Let us, for illustration, take some specific instance: a pair of vari-colored butterflies poised on a rosebush. Taken with color blind film, the pink of the flowers is rendered almost black, as are the greens and to a certain extent the yellow; and the blues are indistinguishable from the white. On orthochromatic, the study approaches an almost natural rendering of color values. While the blue is still recorded as white, the greens and yellows have taken on more detail and the pink has approached nearer its place in tone value. What will happen when panchromatic film is used is readily evident. The image of the delicately designed butterflies has assumed that beauty that one really sees in these summer residents, and you won't have the disappointment that your green leaves and supporting flowers are merely a black silhouette.

Of course, this is only one example. You will first fully realize what can be gained by the use of correct emulsions when you have utilized them to make records of the iridescent marine subjects, many-colored seascapes and landscapes and of the many various chromatic effects that Nature has attained in all her forest folks.

A Cheap Set of Filters

I suppose it is unnecessary to stress the importance of color filters in photography. A sunset, a marine view or a tumbly mass of clouds will show the necessity of a set of color filters. A practical and inexpensive set may be easily made. The only thing necessary is some colored Cellophane such as is obtainable in any 5-and-10-cent store.

Though there is no limit to the number and variety of colors that one may use the following are most essential:

1—Amber, which is equivalent to the K 1 and Agfa 1 filters, to be used when more general contrast is desired, or in taking clouds when the foreground is essential.

2—Tango (dark yellow), which is equivalent to the K 2 and Agfa 2 filters. These can be used when blue is too much in evidence, such as when clouds are wanted to stand out against a dark sky and the foreground is unessential.

3—Red, which is equivalent to the Wratten A and Agfa 4 filters. These to be used only with panchromatic emulsions for good contrast between sky and clouds.

The ingenuity of the camera owner can easily devise a means of attaching these filters to the particular type of camera he may own. The only precautions to be taken are the cleanliness of the Cellophane and the prevention of its creasing or wrinkling.

Clouds

For some obscure reason the taking of cloud pictures has for years been a bugaboo to all but professional photographers. Possibly the slight technical knowledge essential to the use of color filters has been behind this fear. Yet we have all been fascinated by numerous opportunities for recording the ever changing cloud formations. A glance at the notes above will supply the so-called technical information needed for the purposes.

Though vari-formed and ever shifting, any physiographer or meteorologist will inform you that these vaporous masses fall into four principal groups.

Stratus clouds offer very interesting photographic opportunities in the early morning or evening. It is rare that one can get an interesting study by taking a small part of the sky. A wide angle shot is usually desirable to obtain interest in a picture of stratus clouds.

Cirrus clouds may be photographed advantageously at almost any time of the day. The rising sun filtering through them gives particularly enchanting views. If lucky, one may at this time obtain an almost perfect illustration of the Greek poet's "rosy fingered dawn."

The most frequent fair weather clouds are of the Cumulus variety. At midday these billowy forms will rise in dome-shaped masses like huge woolly packed waves. Some of the most beautiful sky photography has owed its value to these clouds.

The Nimbus or storm clouds are rarely deserving of photographic attention except just before the breaking of a storm. At that time some of the fantastic shapes which these clouds assume may make a picture which, if not beautiful, will at least be interesting.

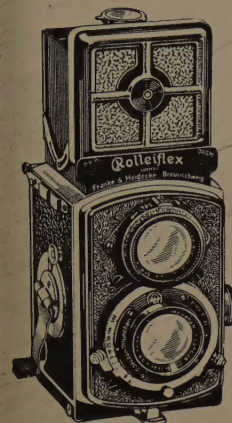
Since filters hold back some of the actinic rays of light, an increase in exposure is necessary to obtain fully timed negatives. The following table is the approximate number of times the exposure *without* any filter must be multiplied to give correct exposure *with* the filter:

	Panchromatic	Orthochromatic
Agfa 1	1½-2	1½-2
K 1	1½	3
Agfa 2	2-3	2-3
K 2	3	8-10
Agfa 4	4-5	4-5
Wratten A	10	—

It is self-evident that a single article cannot erase the accumulation of photographic problems that have troubled our readers. Arrangements have been made to establish a regular question and answer department and we invite the readers to submit any suggestions that may arise in the course of their photographic activities. May we repeat our invitation?

Cordially,
SAMUEL BROWN.

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Blankets and Moccasins

No doubt there have been countless Nature lovers who have longed inexpressibly to possess the gift of viewing its marvels with the same rare insight, the vision, the originality and simplicity in appreciation of the American Indian. To all such the new book *Blankets and Moccasins* by Glendolin Wagner and William A. Allen will have a tremendous appeal. Just issued in illustrated edition, 302 pages, by the Caxton Press, Caldwell, Idaho, the book enables its readers to visualize with the red man the beauty of the sun as it slopes down behind the hills, or the trails that wind in lovely curves close to and around the foot of mountains, with their noon-time resting places far back among the pines where abide only peace, stillness and happiness. They are enabled to hear the soft music of the summer wind in the pine trees, or, perchance, the wild geese flying southward to the winter sun. Or, there may come the roar of the winter gale that piles the snow high, or fills the air with ice nettles that cut into one's flesh, or may look upon flakes coming straight down as large as pop-corn and light as feathers, waist deep on plains and above one's head in coulees. It is indeed a real privilege these authors have given us—to see into and try to understand the heart of the Indian of today, sometimes the lonely, frightened, unhappy and bewildered victim of many bungling experiments in Governmental paternalism. Remembering through this book that he has a background with centuries of Nature-loving ancestry, it is easier to understand why the Indian loves the natural things about him with such tenderness and intensity, for the reason that he has learned that there may be found in them consolation and healing for many of life's ills and misfits—a lesson many of us need to keep more clearly in mind.

Vinegarroon Bite

More light is shed on the bite of the vinegarroon (discussed in Guy Van Duyn's article in our September issue) by Grace A. Shults of Tustin, California. Her brother lives on a ranch near Phoenix, Arizona. The scorpions are numerous thereabouts. One day her brother stopped for a drink at a water hydrant, putting his mouth to the faucet. He felt something enter his mouth with the water, and, attempting to push it out with his tongue, was bitten by it. It was a vinegarroon. Not taking any chances, he felt it best to hurry to Phoenix to a doctor. He drove his own car, accompanied by one of the ranch hands. He remembers getting to a certain intersection in Phoenix but recalls nothing after that. He drove through a red light, made a prohibited turn, and was chased by a policeman who finally caught up with him as he stopped before the doctor's office and slumped over the wheel. Miss Shults' brother was unconscious in the hospital for three days, and it was several weeks before he fully recovered from the effects of the bite.

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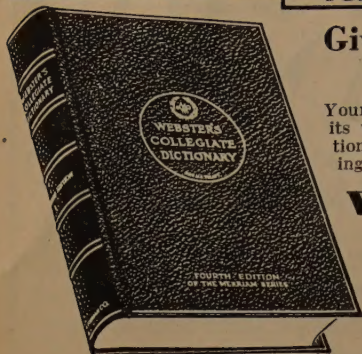
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Commercial Trees

The McGraw-Hill Book Company is bringing out a group of books in what it describes as the American Forestry Series. This series is designed to provide the college student, practicing forester and men in the forest industries with text and reference books under a unified or coördinated plan. Dr. Walter Mulford of the University of California is the consulting editor. The first volume in the series is *Identification of the Commercial Timbers of the United States*, by Harry P. Brown and Alexis J. Panshin. It contains the information necessary to enable the reader to identify, easily and accurately, the commercial timbers of this country by characters visible to the naked eye and with the hand lens; and by minute characters. The book sells for three dollars.

A Nest Site

Roaming the wood during the summer, Jacob Franklin Carnahan of "Bird Paradise," Leechburg, Pa., came upon a black hornets' nest. Taking it home, he hung it by a swivel from the ceiling of his front porch as an ornament. Recently, when he was seated on the porch in the evening, a Carolina wren lit on the porch banister, then hopped to a chair. After jumping back and forth from rail to chair several times, the wren darted up and into the hornets' nest. Ever since, every evening just before dusk, the wren comes and takes up its home in the nest. Mr. Carnahan adds that some eighteen species of birds come daily to his porch for food, justifying the name he has given to his home.



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THE "NEW DEAL" FOR WATERFOWL

They Face the Worst Crisis in Their History

THE Biological Survey states that our waterfowl population has reached the lowest point in its history. The drought of 1934 is the most severe on record. More birds were shot last year than were produced. The testimony of observers of all kinds, shooters and non-shooters, indicates a decided and increasingly alarming decline. Whether the evidence be tabulated by numbers or percentages of observers, by species, or by lines of flight, it points to an appalling wastage of this beautiful and useful resource. The situation is so serious that in some of the states even the hunters advised a closed season.

But, instead of being accorded freedom from shooting, the harassed birds now face an open season that promises to be the most disastrous in the history of North American wild fowling. Nominally the season is comparatively short—thirty days—but these are permitted to be interspersed among "rest day" periods, when no shooting is done. The rest day is a device to let the birds lose their caution, that they may be more easily killed. Baiting, another device for increasing the kill, may be practiced under permit. There are imposed, of course, restrictions as to bag limits, possession and species.

In addition to a state hunting license, the cost of which averages about a dollar and a half, the waterfowl hunter must now buy a federal license costing one dollar, in the shape of a stamp that must be affixed to his hunting license. This is good in any state, and for one season. The ostensible purpose of the waterfowl stamp is to furnish funds for the purchase of refuges. We believe that its real purpose is to stifle restrictions. What proportion of the waterfowl killed by a gunner in a season can possibly be replaced by the final expenditure of this dollar is a problem that calls for the exercise of imagination rather than of reason.

It has long been the custom of many gunners in the Mississippi Valley (and other sections where conditions are favorable) to buy hunting licenses in several states. Non-resident licenses cost more than the others, but are popular this fall, according to the sporting news columns, for under the regulations now in force the gunner perceives an unusual opportunity to increase materially his sport and bag.

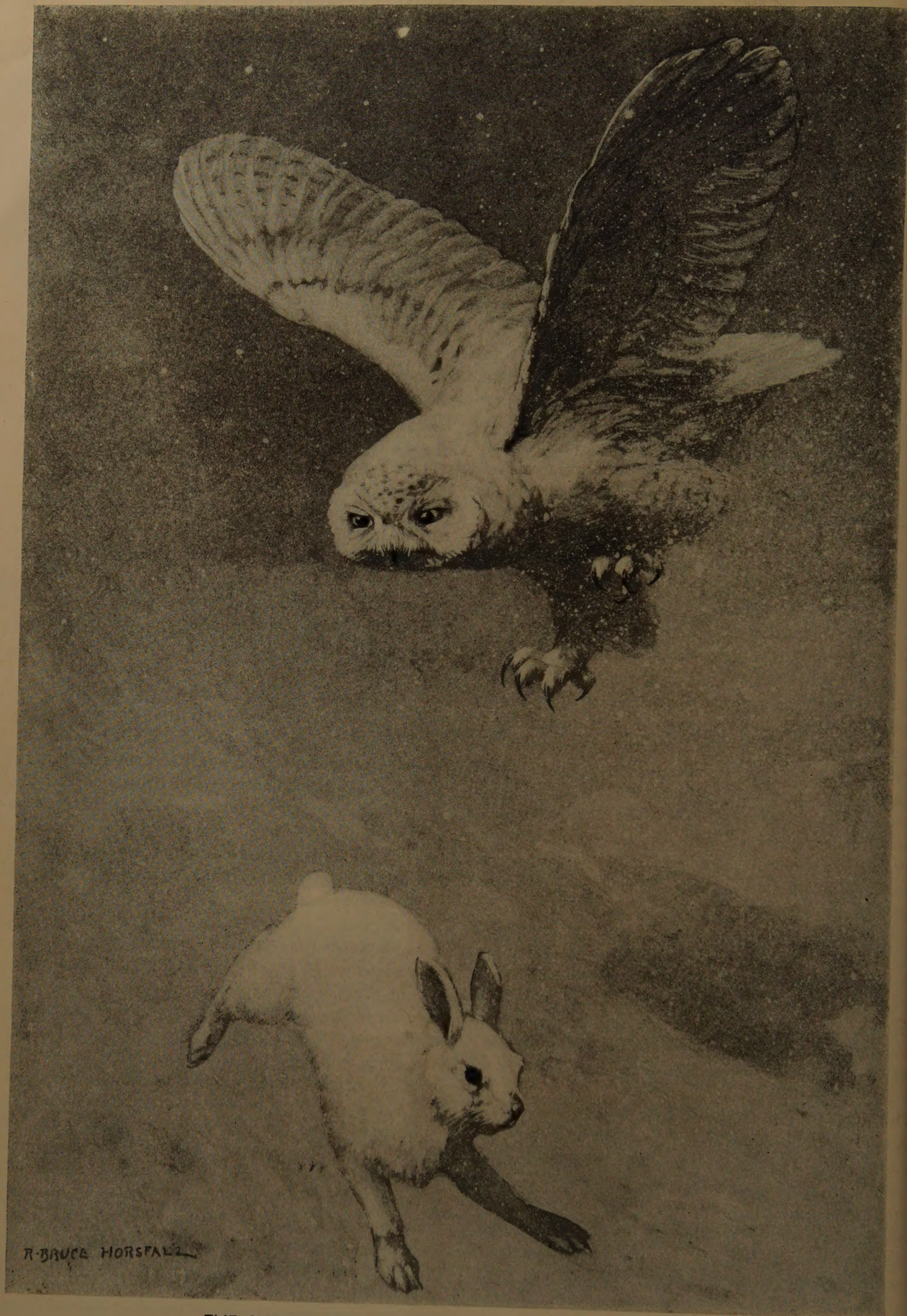
Let us follow in fancy a wealthy Missouri gunner, with leisure to indulge his desire for sport. He takes out licenses in his native state and the adjoining states of Illinois and Arkansas. A study of the prospective seasons convinces him that an investment in Iowa is likely to yield further dividends to his liking. He buys his duck stamp, which will survive many transfers. He must have club memberships, or patronize the commercial clubs, or have friends in the different states. These requirements met, he plans the season's itinerary.

Illinois, across the Mississippi, offers the earliest shoot-

ing days, October 6 and 7. But to wait in Illinois until October 13, the next shooting day, would plainly mean wasted time, so he hies him to Iowa, where on October 10 he settles down to five days of hunting of tame corn-fed birds. He can then rest two days and enjoy five more days of sport, or can slip back home and take advantage of Missouri's first open days of the slaughter season. On October 22 and 23 he must rest, with the ducks, and on the 24th and 25th likewise, unless he chooses to motor or fly back to Iowa. On October 26 to 28 he can shoot at home, but the last day of the month gives him his next shoot, and to get this he must go back to Iowa again. However, if he goes there he will have the first four days in November, and then, by waiting a couple of days, five more days. But, he can do nearly as well in Missouri, and even better in Arkansas. Still, if he hunts in Missouri, Arkansas and Illinois he can get nearly two weeks' further shooting, well punctuated by rest days, in November. With the advent of December he may definitely ignore Iowa, but she has given him about ten days' shooting that the more southern states did not offer. December affords him a good choice of dates aggregating about two weeks more, and even in January he is favored with a few days in Illinois.

All in all our gunner, the "best friend of the ducks," has no reason to deny that the claim that the shooting regulations favor both birds and sportsmen is at least half true. From a season that was claimed to permit only thirty shooting days, he has been able to glean between forty and fifty. If he is one of the fortunate ones, he has always found the ducks fed and tamed for his gun, and he has enjoyed the thrill that comes from realizing the advantages that properly accrue to the elect.

The hunter whose exploits we have outlined is an imaginary one, but his type is only too real, and he does not always hail from Missouri. He may be an easterner, or a westerner. He may be able to hunt in but one state, and he may not get so many ducks, after all. But whatever his limitations or his advantages, he has had every opportunity to learn that he is helping to destroy forever a resource that belongs to all of us. He knows that the birds he pursues face this year their darkest prospect, and that reason and humanity alike dictate respite from the gun for a term of years. He knows that, but for the influence exerted by him and his kind, the harassed birds would this year get what they deserve, in place of the outrageous betrayal they now face. We wonder by what mode of reasoning he justifies his presence in the blind on the opening day, purposing to kill the legal limit of birds that have travelled the drought-swept waste from their breeding grounds and now, to gratify his love for slaughter, he has lured by the promise of food and rest within range of his gun.



THE SNOWY OWL, WHITE KNIGHT OF THE NORTH,
HUNTS THE ARCTIC HARE ON THE WINTER WASTES

White Corsair of the Arctic

*The snowy owl and others of his tribe
come down from the North in winter*

By JOHN LINDSEY BLACKFORD

Illustrated by R. Bruce Horsfall

NOVEMBER'S moon, the Moon of Madness, is shining, tracing fragile etchings in black and silver upon the snow. The valley seems peaceful in the moonlight. The dark forest stretches away to the foothills, sweeps over them, and climbs toward the summit of the mountains. Up next the stars the gleaming ranges are coldly beautiful.

But life in the valley is astir and the air above is aquiver with the swift beating of wings. Over the ranges and beyond, and across the entire continent the glorious drama of migration is being enacted.

On the caribou trails of the North thousands of animals move on the long trek. Bighorns seek lower altitudes. Overhead squadrons of Canada geese race southward in regular flight formation. Cranes, ducks, trumpeter swans, loons, curlews, and plovers are passengers by the aerial route. Many have already gone with the waning of October's moon. The Arctic tern has taken wing for the nether pole. The songbirds shun the approaching cold. This is the migration of which we humans are aware; its music is the beating of wild hearts, its motif is a wedge of gray geese across the yellow moon.

Unheralded and unknown to many, a second migration is to follow. There is no clamorous retreat, no dismayed exodus when storms suddenly precede their season; neither do the participants leave winter's domain, nor do they greatly fear the cold.

Nature's stage effects at this season are most striking. The planet is swinging around that end of its orbit where the tilt of its axis tips the northern pole away from the sun. Again King Winter dons his crystal armor and as he labors anew to mantle the pole with ice his heavy breathing chills the continent. Maurauding blizzards sweep down from the Barren Grounds of upper Canada, and cold, killing cold, is upon the Arctic. Now it is the colors of summer earth and sea seem to have been flung up into the sky. Curtains, coronas, and streams of every color, tint, and shade illuminate the heavens; there is brilliance and suffusion, radiance and ephemeral glow,

faint tinging and bold adornment. It is from this Valhalla of the rainbows that our winter visitors come.

Down from the polar sea journeys a Norseman of unsurpassed daring; he is the snowy owl, the white knight of the north. Upon the great plains he can find food to sustain himself, though none but such a hunter as he could do so. On the vast, unsheltered prairies bitter gales harry every living thing. The nights are long and cold. The temperature is often below forty. It is at this season he will pursue and slay the Arctic hare, an animal twice his weight.

From Labrador the snowy owl migrates to the North Atlantic states and often to our middle latitudes. He has been observed, though rarely, close to our southern border. The bird is a circumpolar species and is celebrated in eddas and sagas of the old world as harfang, the hare-catcher. We know him too as the ermine owl.

He is a day-flying bird, and as you drive over the long roads of eastern Montana you may become one of the fortunate ones who have seen him. The rolling hills that last April and May smiled with pasque flower and buttercup, or laughed gaily in June with wild rose and gailardia, seem now to crouch low under the gray skies, drawing their snow-mantles tightly about them. Ahead, along the straggling fence-line, a single snowcap clings to a tall post. You come nearer, it moves, and two large lemon yellow eyes gaze at you thoughtfully. The great white corsair of the Arctic is a thrilling sight, so majestic and fearless is he. Effortlessly he takes wing and precedes you in billowy flight, alighting again with the grace of mist descending from a waterfall.

Another day a south wind, lost and wandering on the plains, moans fearsomely in dread of the impending storm. Along the creek, alders and willow, naked and impotent, rasp and saw against each other. Snowdust and sleet mingle indistinguishably on the flat. We draw rein at the mouth of a coulee and see no live thing on the broad expanse before us. We do not expect anything to be there. But a white wraith slips by. Who but the snowy



owl high on the wind, magnificent in its mastery, undaunted by its arrogant voices. Wrapped to his eyes in a white feather parka he has sped down from the North before many such blasts, a winged viking outriding the storms.

The return home is in March, and the homemaking soon begins. The nesting area extends far within the Circle. Breaking the shells of the smooth white eggs the young view the world from atop some hummock of the tundra. Their juvenile feathering is dark brown or sooty gray. The almost immaculate white plumage of the mature male is emulated by his larger mate but with barring of slaty brown. The spread of her softly-cushioned wings may be five feet; they are the acme of silent flight.

Not nearly so destructive as imagined and of great economic value in checking the rodent hordes of the North, it is regrettable that so many thoughtless people see in this wondrous bird only something more to kill. In our stupidity we style him predator and killer but his place in the scheme of things is legitimate. He is the perfected spirit of his environment and lives only in the way Nature has instructed him. And how splendidly he lives that life.

In the North, life is reserved to the swift, the strong, the resolute. There hunger is a merciless master and cold a never vanquished foe; relentless they have made him, it is true, but not rapacious.

It is not strange that this ghostly bird, omen-like in its appearance, should feature in a number of grotesque and comic incidents. Not infrequently one or more individuals of the species, lost at sea during their annual migration, has sought refuge on the rigging of a ship. The story of one sea-going owl may, I think, be repeated here. Fatigued by hours of fruitless flight he had at night settled upon the yard-arm of a clipper ship, thankful to find this unexpected haven. The bird was quietly seated upon his perch, when he was abruptly aroused by a sailor sent aloft on some nautical duty. The fellow, terrified at the two glowing eyes that suddenly opened upon him, almost fell to the deck in his haste to report, "Davy Jones is settin' on the main yard."

The Arctic horned owl, the snow leopard of the feathered folk, is of that same genus over which the great horned owl presides. Its plumage is white with similar markings and barrings though these are more restricted upon the under parts. It possesses the characteristic horns or feathered ear-tufts. From Northern Mackenzie and central Keewatin he migrates, when snow comes, to Dakota, Montana and Idaho, and along the mountains to Colorado.

The Arctic owl loves the borders of the forest from which his forays may take him either out upon the tundra or the plains or back into the timberlands. His nest, usually in a tree, may have been that of a hawk or a crow.

When early darkness sends one hurrying down the long trail you may chance to see him resting on a low branch among the jack-pines, or, again, catch a glimpse of him in flight out over the wild brush country. Truly he is a taloned erl-king at home with the warrior winds.

The immense, almost boundless, forest that clothes the Canadian Rockies and extends far into the Arctic is the principal home of the great gray owl, *Scotiaptex nebulosa nebulosa*, which means gray, eagle owl of darkness. He is also known in the spruce swamps of

Alaska and in northern Manitoba and Ontario. Over the little folk of this vast domain he holds invisible sway, a ruler with powers absolute, a feathered tyrant, unseen by his subjects, until his menace

THE CANADA OWL,
PERCHED ON A LIMB,
MIGHT BE MISTAKEN
FOR ONE OF THE HAWKS

is upon them, swift and sudden on wings of the softest silence.

At the coming of winter he moves southward through the denser forests into southern British Columbia and boldly crosses the border into Montana, Wyoming, and northern Idaho, and into the remote woodlands along the boundary eastward. His presence in the forest excites our imagination, lends romance to the wilderness and adds interest to our adventuring within it.

On a night when acetylene stars pierce the dusky dome that arches overhead and shine down with steely brilliance, leave the trail and melt noiselessly into the trackless woods. You may do so many times, however, ere you behold him, a giant moth, in shadowless flight.

From the uncouth darkness amid the trees there emerges momentarily a phantasmal apparition. Is it flesh or spirit only? Is its existence real or merely fancied? A terrified squeak abruptly terminated tells us. Steel talons are carried by this gray ghost of the gloom.

The bird glimpsed in such transitory fashion evinces a love for its natural home seldom rivaled. In the North, of necessity, it flies abroad in the dimmer hours of the long day, returning always to the deepest fastnesses of the timber. Let us intrude within some grove of ancient spruce. Gnarled roots reach out their sinuous lengths to clutch damp earth; under the thick canopy of living boughs the huge trunks stand pillar like, save where dead branches, like bleached bones, stretch downward. Such places we would call the catacombs of the forest. Looking up we discern phantom shapes, great gray owls circling over us, snapping their beaks fiercely.

By the necromancy of twilight the gray owl becomes the incarnation of unrealities. As he passes down the dim avenues of the forest, his soundless flight emphasizing the stillness, he seems to us the genius of some eerie half-world.

It is apparent in the flight of most birds, whether it be the ponderous winging of pelicans, the aerial acrobatics of swallows, the bullet-like speeding of ducks, or the soaring of eagles, that the air is a sustaining medium, but owls in their flight, like spirits recalled from the shadow world, appear to float as in a void. In the air the gray owl is as silent as starlight.

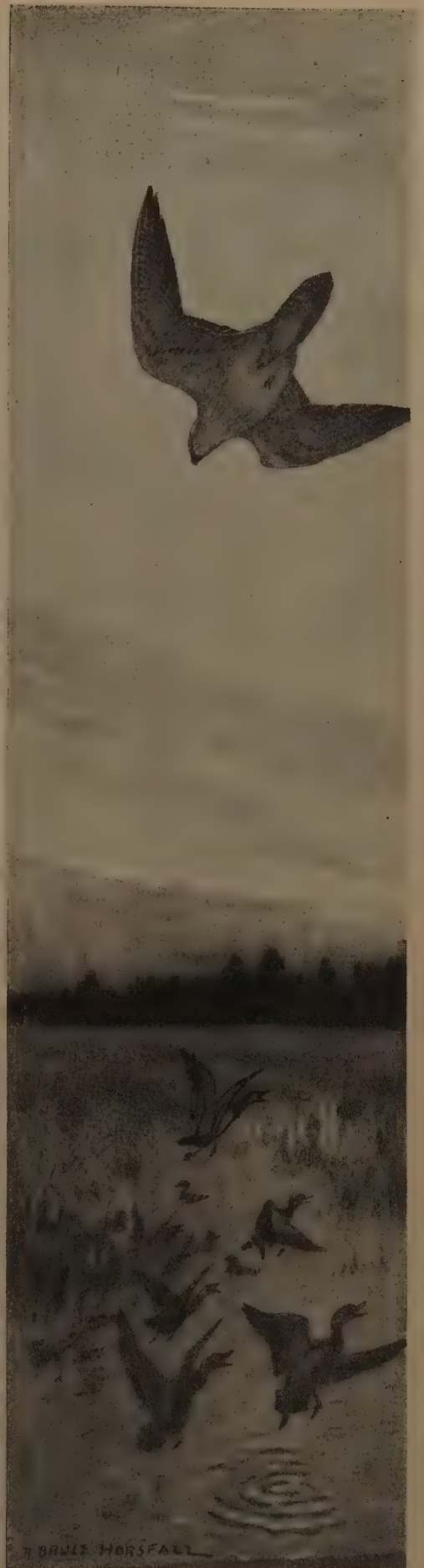
Yet if to ourselves his appearance is spectral, what words can describe this raider of the night as he reveals himself to the hunted. The owl is traditionally the Solomon among birds, but to the wee four-foots his is a wisdom diabolic. The great gray marauder is their Machiavelli of the black arts, their demon-deity of the dark.

Out of the black nothingness of the night he pounces upon his prey, preceding even the premonition of his presence. He is the loup-garou, the flying werewolf, of the little people of the woods.

"Tiger of the Air", is the sobriquet of the great horned owl; the gray owls then are its panthers. But this also is in Nature's provision. She knows that danger is an essential element to our ultimate wellbeing; for fear may motivate us to our highest state of perfection as well as reduce us to our most abject condition. Under its acid testing the fit are selected, the weaklings discarded.

The hawk owl, whose home extends to arboreal limits in the Arctic, furnishes a curious example of a nocturnal bird which has returned to a diurnal existence. While remaining quite owl-like he at the same time exhibits markedly hawk-like characteristics; in addition he has acquired habits in hunting, flying, and perching which peculiarly distinguish the behavior of day-flying birds of prey. The owl may be seventeen inches long with a wing spread of three feet.

A GYRFALCON ATTACKED A SMALL FLOCK OF MALLARDS FEEDING QUIETLY ON A NEARBY POND



From black or brownish black upon neck and crown the color changes to a rich dark brown on the back which is speckled with white, while below the feathers are white, barred with brown. Further evidence indicative of his owlish lineage are the fully feathered feet. We must look at the face of this avian "what is it"; however, to perceive the astonishing similarity to both birds. The facial disks of the nocturnal hunters are there, but they are poorly developed. The long beak and fierce cast of countenance would otherwise proclaim him to be a hawk.

When you see the Canadian owl, as he is sometimes called, perched conspicuously on the top of a stub or tree you would be apt to take him for a hawk. When he swoops earthward and swiftly beats his way low over the ground, terminating his flight with a sharp upward curve to a new vantage point, it is not likely that you would notice anything in his manner by which to distinguish him from the hawks that he so closely resembles.

In Montana the hawk owl is to be observed mainly in the northwestern part of the state. Hardy and courageous, it may begin the return journey to the high latitudes early in February, several weeks before the departure of the snowy owl. There, near the Circle, and beyond in the land of the midnight sun, this owl finds himself at home. It is, indeed, no place for an owl desirous of leading a night life.

The rough-legged or black hawk, on the other hand, is a hawk who does much of his hunting during the fading twilight of evening or in the gray hours of dawn. As his dusky form glides silently along on the borders of the night it is scarcely recognizable to us, yet he can make out the small form of mouse or weasel within the cover beneath. In fact, he has been observed capturing his common prey, the meadow mouse, even by moonlight. To them he is that black-clad inquisitor, Death himself.

We find the rough-legs upon the entire continent north of Mexico, breeding for the most part in Alaska and Canada and wintering in the United States. Coming from as far north as the distant Bering and Arctic seas, the weather of Montana's lowlands and prairies does not seem forbidding to them. They occur frequently on the Gallatin from October to April, inhabit the southern and northeastern plains regions, and are common along river bottoms and in orchard country throughout the state. In his reddish, brown, or dark plumage, banded tail and feather leggings he is, indeed, a chieftain among hawks.

The white gyrfalcon cannot be included in a list of the regular visitors from the Arctic to the Treasure State. When within the borders of our country he is, rather, a wanderer, an adventurer as bold as Leif the Lucky. So rare is his occurrence this far south that it has been said, "a man may consider himself fortunate if he sees one in

a lifetime." Such a one, indeed, is worth search and study.

This gyrfalcon inhabits all of the very cold parts of the north and was formerly secured for falconry only at great expense. In feudal times they sat upon the wrists of royalty, being stronger, swifter and less amenable than the peregrines.

The splendid wingspread of these birds reaches fifty to fifty-five inches, to a body length of two feet or less. The entire plumage is white, marked on the upper parts with pale ashy drops and crescents. The beautiful eyes are brown, the beak bluish horn, the feet livid blue, claws blue black. Thus similarly may the gray gyrfalcon be described, save that the general color is grayish, marked with pale bluish gray spots and darker bars, the tail definitely banded.

A gyrfalcon's nest may be on barren rocks or on the narrow ledge of some cliff with the sea booming out its slow monody far below. The young eyases go forth on strong wings like new fighting planes taking to the air.

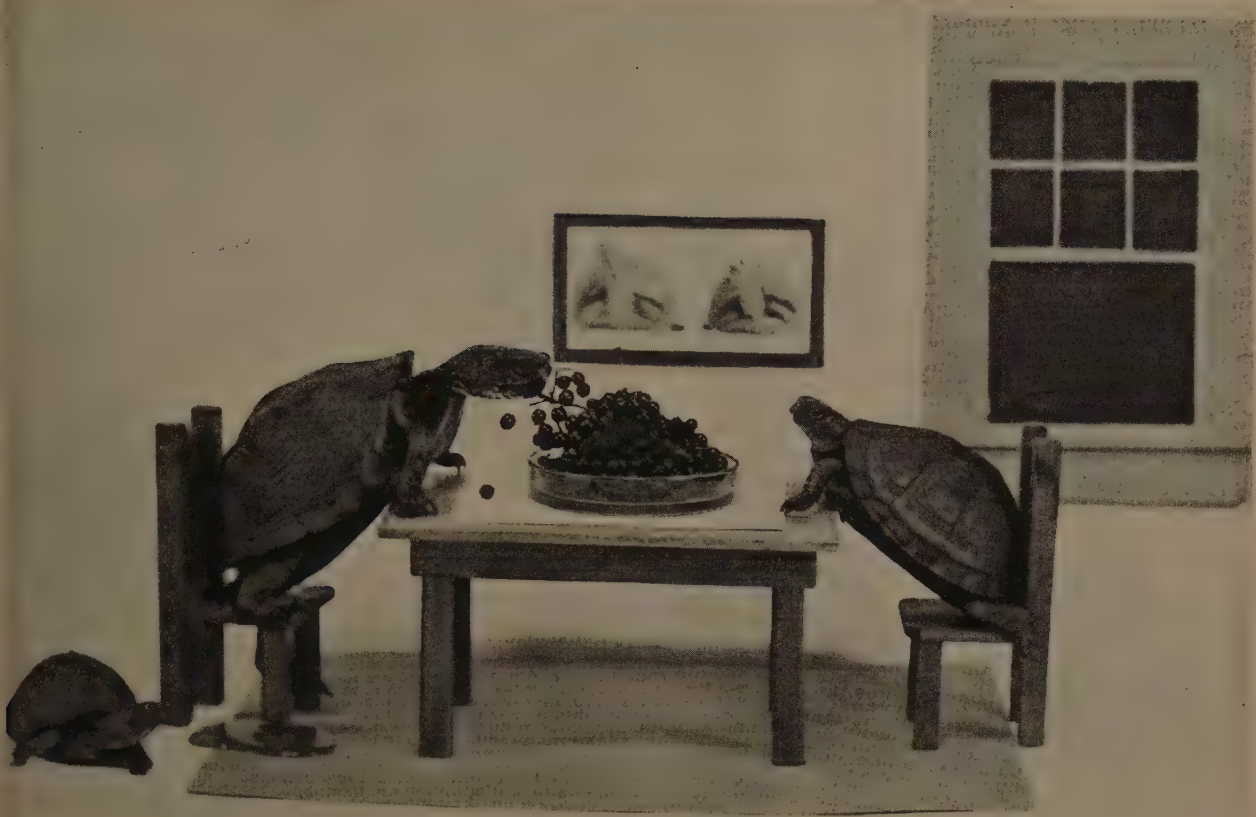
Since I am not one of the few who have seen the gyrfalcon I shall quote my friend, Winton Weydemeyer, young Montana ornithologist, in order to give a more intimate picture of the great harrier. Writing in *Condor* he says:

"On December 9 and 10, 1927, I observed a gyrfalcon with almost entirely white plumage, suggesting *candicans* (the Greenland gyrfalcon) near Fortine, Montana.

"At dawn on January 20, 1930, a large raptorial bird believed to be a gyrfalcon attacked a small flock of mallards that had spent the night in a spring-fed pond a quarter of a mile from my home. Passing over me at such extreme speed that the whistling of its wings became almost a scream, the falcon hurtled itself downward toward the pond as the frightened ducks arose in great confusion. The distance and the lingering darkness together prevented me from ascertaining the outcome of the early morning raid. Similar raids had been heard just before daylight on at least two mornings during the previous winter, but the dates were not recorded, the identity of the bird being unknown."

For my own part the gyrfalcon even on the pages of a Natural History has seemed a bird of mystery and romance, stirring in me a spirit of adventure. Who of us, indeed, would not care to launch out on white wings over a land where blue glaciers slide into the sea, and where as we cling to the crags the winds blow untainted from across the pole?

Though I have never met him I know what I should say in greeting. I could not refrain from raising high my hand in salutation and calling to him "*Skool*"! And he would answer with his war cry, screaming fiercely as he wheeled upward into the blue, disappearing like a silver kite into the sun but leaving a vivid memory behind.



MEALTIME IN THE TURTLE HOUSEHOLD IS AN EVENT

The farthest advance in the direction of domestication came when the turtles sat at table and ate berries out of a glass dish just as though it were natural

LOOK UNDER THE SHELL

The box turtle proves an interesting pet

By H. H. SCHWARDT

University of Arkansas

THOSE who enjoy maintaining a back yard zoo should not overlook the box turtles. They make most interesting pets, require little space and are not bored by captivity. Two years ago, while making a miscellaneous collection of reptiles, I adopted three of these creatures. From then until now they have contentedly made their abode in a laboratory sink. From the most timid and retiring of animals, they have been transformed into active and apparently intelligent pets. Their farthest advance in the direction of complete domestication occurred recently when they were persuaded to sit on miniature chairs at a miniature table, and eat their meal of elderberries from a small glass dish.

After less than two weeks of sink life the turtles had lost most of their nervousness and seldom closed their shells unless roughly handled. For a while they eyed their keeper suspiciously, but before many days they adopted the habit of meeting him at the near side of the sink whenever he entered the room, a habit prompted not by

affection but by the hope that food might be forthcoming.

Feeding time always brings forth a veritable circus of awkward antics and a demonstration of gluttony that ends only when the last morsel has been bolted. They are specially fond of earthworms. Two of them often tug at a big one like a pair of week-old chicks, until the unfortunate worm snaps or has his mid-section removed by the third of the hungry party. Large or active articles of food are accepted with less immediate enthusiasm. Such an offering is always approached cautiously while the turtles study it carefully in a manner reminding one of a company of perplexed old hens contemplating a luscious but also dangerous looking morsel. Eventually courage mounts up in some member of the group and a peck is aimed gingerly in the direction of the new viand. More pecks soon follow and a typical scramble for the morsel finally ends the act. If a single grasshopper is dropped among the group the nearest turtle snaps it up and makes off on an endless circuit of the sink with his two mates



STILL SOMEWHAT DUBIOUS ABOUT THEIR SITUATION

For a while they eyed their keeper with suspicion but finally learned to welcome him

EARTHWORMS AND INSECTS ARE MUCH PREFERRED

A gift of a worm is a signal for a tug of war with the meal a victim of the tugging

in close pursuit. In the end the grasshoppers are divided like the worms, the fastest worker getting the largest share.

An extensive feeding of grasshoppers always brings the turtles to a high state of excitement so that for some minutes afterward they are likely to snap at one another's legs and tails. In fact it is entirely unsafe at such times to leave young individuals in cages with old adults, as was well shown by three major tragedies which occurred in a second cage of turtles. Two small specimens each lost a leg and soon died from the resulting complications. A third youngster was divested of his entire head and neck by a ravenous old female who for half an hour following a grasshopper feast lumbered about the cage snapping at anything that moved.

Unlike the majority of reptiles, box turtles will eat either vegetable or animal food. Earthworms and insects are much preferred, but blackberries, mulberries and other wild berries and fruits form a considerable part of the diet. Five turtles were once found feeding under a large mulberry tree and two of them were so engorged that they could not coincidentally close both the fore and hind portions of their shells. Grapes, elderberries and apple cores are freely taken, and if very hungry they will eat small amounts of green grass! A farmer in south Arkansas recently stated that turtles sometimes ate holes in his ripe cantaloupes. Once, during a temporary famine of bugs, berries and apple cores, the hungry trio in the sink were offered some well-soaked kernels of yellow corn which, to my considerable surprise, they accepted with the alacrity of so many chickens. Like most reptiles the box turtles can undergo long periods of fasting without apparent inconvenience. One that was kept under observation without food for six weeks was just as active and to all appearances as healthy at the end of the period as were his over-fed fellows in an adjacent cage. The pangs of conscience and the small importance of the matter prevented further extension of the experiment.

Though usually considered a classic emblem of slow motion the box turtle can actually run if the occasion



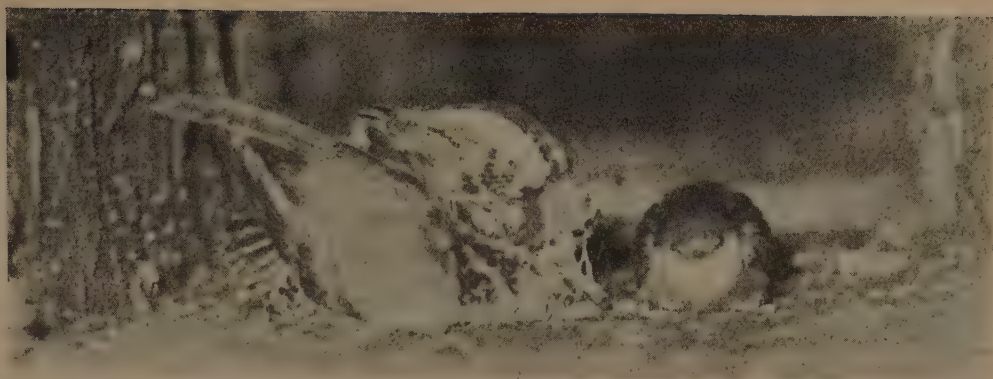
merits the effort. Individuals suddenly surprised in their native haunts often run a few feet before closing their shells. When tussling over a grasshopper caged specimens often run, clamber over one another's backs, and give other demonstrations of agility which would appear incredible to one reared on the natural history of Aesop or Mother Goose. Young individuals are able to travel much faster than their elders which possibly is an adaptation to help them escape from danger during the period while their shells are too small and thin to afford them much protection. Incidentally, specimens two inches in length or smaller are seldom seen, and eggs or newly-hatched young are rare even in professional collections.

The box turtle is not a lover of water. He uses that element only sparingly, even for beverage purposes. Some individuals have such dense bodies that they sink like rocks when placed in water but the majority can float enough to keep their noses above the surface unless caught in very turbulent water. On several occasions I have found dead turtles evidently drowned by the sudden rise of small streams during the late spring rains. Floods and brush fires appear to be the chief natural hazards which affect the lives of these reptiles.

For animals of their small size box turtles enjoy long lives. The observations of various students of reptiles seem to indicate that certain individuals may live for half a century or possibly longer. Well protected from the physical hazards that beset most forest creatures, able to subsist on a wide variety of foods, secretive, cautious and inoffensive to man, the box turtle is indeed well equipped for long life. His interesting and useful habits make him entirely deserving of that pleasure.

THE CHIMNEY SWIFTS AT HOME

Mrs. Swift is on the nest and Mr. Swift clings to the wall of the chimney beside it. The baby swifts are barely to be seen in the nest



Chimney Witches

By MARK F. EMERSON

THE first time I heard the squeaking in the partition in the shop I thought, of course, it must be mice.

Mother protested that she had none of them in *her* house. What I had heard, she insisted, must have been chimney swifts in the unused chimney between the shop and the old kitchen. I listened again and decided that she was right.

Then came an idea. The squeaking seemed to come from the place in the chimney where the stove pipe entered. If the swifts had by chance placed their nest opposite this flue, then by removing the pipe I should be able to see it. Perhaps I could even take a picture of it. If the nest were not directly opposite the opening it might still be possible to arrange a mirror so that I could observe and photograph the young birds. But I really did not take the idea seriously.

Several mornings later, however, I thought I would at least remove the stove pipe and see what the possibilities were. Father helped me take the pipe out but we could see no nest through the opening. We were about to put the pipe back when I decided to try the mirror. By holding a small hand glass at an angle of forty-five degrees inside the chimney we could see all of its interior. And there just about a foot below the opening was the nest of the swifts.

It was a shallow basket of twigs stuck to the perpendicular side of the chimney. Between the twigs you could see the hardened strands of the sticky saliva by which this strange bird glued the nest together. On the apparently fragile platform was sprawled a mass of dark, pin-

feathered bodies and wings. The baby birds were piled up so that it was impossible to distinguish one from another, but there seemed to be three of them. Here were my "mice" and they were still squeaking.

I wondered if it might not be possible to obtain a picture of them after all. While wiring the mirror to a lath at the correct angle to form a periscope, the solution came. Why not put a screw-eye in the wall above the flue, suspend the lath from it, and balance the mirror with a weight of some kind? Using an old pipe wrench for a weight I soon had everything satisfactorily arranged.

The next problem was how to provide enough light to take a picture. The opening at the top of the chimney let down light by which to see the nest but it was hardly enough for photography. Ours is an old house with stove pipe openings in every room so I decided to put a floodlight into the chimney through the opening in the room above. Two "photoflood" bulbs in a double socket solved that problem.

It was quite easy to set my camera up in front of the opening where I had arranged the mirror and focus it on the nest as it was reflected there. By experimenting I found that, with the floodlights about six feet up the chimney, an exposure of ten seconds would give a good negative.

While I was taking the picture of the nest and the baby birds one of the old birds came fluttering down the chimney. She protested vigorously against my intrusion on her domestic affairs. When her disturbed twitterings failed to frighten me, she jumped back from the side of the chim-



PHOTOGRAPHING THE SWIFTS

The pictures were taken with the camera focussed on a mirror set up inside the chimney



YES, JUST A CHIMNEY WITCH

One of the parent birds clinging to the perpendicular side of the chimney and looking up at the camera. Notice the claws

ney, where she had clung, and snapped her wings at me. As she clung to the side of the chimney looking up at the mirror, she was a most peculiar looking object, hardly recognizable as a bird. By tilting the mirror slightly I was able to get a picture of her in this position. Because she wore a black costume and inhabited this dark, weird cavern formed by the interior of the chimney, I could not help thinking of her as a little witch.

I was anxious to obtain a picture of the old bird feeding the babies but the mirror was so close to the nest she seemed afraid to approach. I therefore decided to move my apparatus upstairs. There I could arrange the mirror in the stove pipe opening in one room and introduce the lights to the chimney through the opening in the next one. In order to take pictures while the birds were moving, I added a "photoflash" bulb to the floodlight. The cords from both lights were connected with a socket in the same room with the camera so that they could be controlled from there. The mirror was now about five feet above the nest, which gave me a much better opportunity to watch the birds and a greater depth of focus for photographing them.

I soon discovered that it would be impossible to secure a satisfactory picture of the mother bird feeding the babies for she always flew past the nest and then came up from below to give them their food as they leaned over the edge of the nest. Thus she was entirely hidden by the nest at the time, and all that showed was a confused flutter of wings.

From my observation, I believe the old birds fly backwards at least part of the time in going down the chimney. As they flutter over a chimney outside they seem to drop backwards into it, and several times when I happened to see one flying down inside, it seemed to be letting itself down with its wings, while always facing upward. I tried to take some pictures of them flying inside the chimney but their motion was too rapid for even the photoflash bulbs to stop.

I am sure the birds crawled backwards sometimes in descending to the nest. They spent a great deal of time

clinging to the side of the chimney always in an upright position. Occasionally one would start dropping away from the mirror as it awkwardly hitched himself from side to side while still facing upward. I was a little puzzled at first as to what he was doing, till I discovered he was crawling down the chimney backwards.

One of the main activities of both the parent birds and the young was scratching themselves until it was painfully evident that there was some justification for the old superstition that chimney swifts may bring bed bugs. However, I am happy to say that none of these obnoxious insects escaped from the chimney in our house to corroborate the superstition.

As soon as the youngsters were strong enough they left the nest and spent their time clinging to the chimney beside it. They were remarkably patient, and would spend hours there without ever a "cheep." Meanwhile the twitter of their parents, scouring the skies above for insects for them, would keep drifting down the chimney to encourage them. When one of the old birds came down with a flutter of wings like the roar of distant thunder, what a squeaking the youngsters would set up! Then the parent would cling to the chimney beside the young birds, and pass over to each child his allotment of rations.

Once when I looked into the chimney two of the youngsters were clinging to the bricks side by side. One had his wing about the shoulders of the other in what appeared to be a most affectionate embrace. But when the first youngster suddenly decided to exercise his wings a bit the second one received a terrific beating which was anything but affectionate. The fluttering wings made his head bob back and forth as though it were about to break off. He seemed to realize that his brother must have his flying lesson, however, so he shut his eyes and bore the thrashing without complaint.

Each day the fluttering of the young birds became more vigorous till I knew that it would not be long before they would be up the chimney and away. Finally one morning when I came to make my usual inspection I found the chimney empty and bare. The birds had flown.

In December, Charles Fitzhugh Talman tells of some facts and fancies about winter, the fourth article in his interesting group on the seasons. Another feature of the next issue of Nature Magazine is a fascinating story of a desert Nature trail. The rotogravure section spreads before us more fascinating Nature pictures.

Chicory

*A cosmopolitan plant
with history and value*

By F. LAMSON-SCRIBNER

Photographs by the author

CHICORY, *Cichorium intybus*, is a deep-rooted perennial two to four feet high that in early summer appears to be only a coarse scraggly vagrant wandering along roadsides or in dry neglected fields without abiding place or purpose. As the season advances a great change takes place; the stiff and almost leafless stems are clothed with many showy sky blue flowers. Our chicory assumes a surprising beauty that has inspired writers in many lands to extol its charms in verse and legend.

An old legend that comes to us from the days when heathen gods visited the earth in search of sweethearts or wives, tells of the origin of chicory. The legend states that upon one of these visits the Sun God met the lovely Florilor of Roumania, the "Lady of the Flowers." He was captivated by her many charms and soon asked her hand in marriage. But Florilor, for reasons of her own, rejected his advances, whereupon the God became so very angry that he changed her into chicory, the plant of her choice.

It is during the months of summer that chicory comes into full bloom, the flower heads, containing about twenty florets, when expanded are from one to two inches across. They open in early morning with the rising of the sun as if in joyous greeting to the light of a new day, and when the sun is at "high noon" the petals begin to fold inward and soon the flowers are completely closed. The action of the sun upon plants during the blooming period is interesting. The regularity of the daily response to the rays of the rising sun and the going down thereof has always been a source of wonder. Chicory is a good time-keeper a fact noticed by Linnaeus who included it in his "Floral Clock".

There are day-blooming and night-blooming plants, and those that open only at certain hours of day or night. There are among insects those that are day-flyers and those that fly by night and those whose activities are limited to briefer but equally definite periods. The relation of these actions between plants and insects, their scheme of cooperation and interdependence upon certain vital functions present a Nature study full of surprising interest. But that is another story.

The grouping of the flowers of Chicory, two or three together along the branches, is like a decoration composed of a series of bright blue boutonnières. The lowest group expands its petals first to be followed in due time by those above, the topmost group closing the scene.

Each floret produces a single seed which is about 2 mm.



THE BLOSSOMS OF THE CHICORY

Its blue flowers have inspired the poet to write and have given the spinner of legends much material

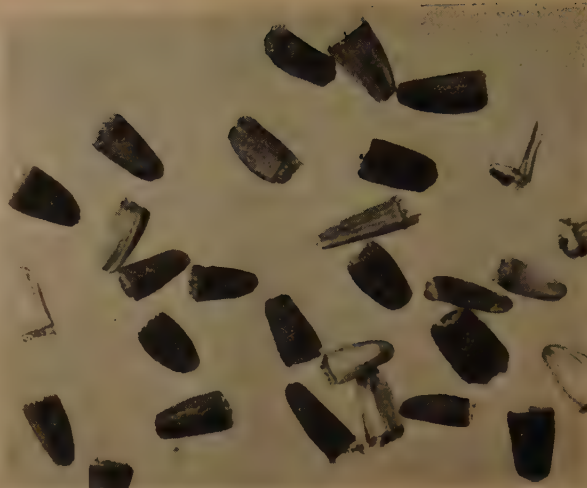
long, obscurely five-sided, minutely striate and crowned with a pappus composed of one or two rows of minute chaff-like scales.

English botanists claim chicory is a native of their Island. It is indigenous to the entire Mediterranean region and is well known throughout Europe as far north as Lapland, its range extending eastward across Asia to the farthest limits of the Orient. It landed on American shores a hundred years or more ago, coming in ships' ballast—earth or gravel was ballast in those days—in imported clover seed, or by the hand of some immigrant for planting about his new home in America. In the years that have passed since its introduction chicory has become thoroughly established. Now its range extends from Nova Scotia to California and southward to Florida and Texas. It prefers a cool climate, being more abundant and growing more vigorously in the northern states where, as in Michigan and Minnesota, it has become a weed difficult to eradicate.

However troublesome chicory may be in its wild state, its importance as a food plant has long been recognized. Two thousand years ago it was a staple dish among the poorer classes of Egypt and central India. Even without any cultivation it supplies an abundance of root-leaves that resemble those of the related dandelion and are equally valuable for greens, while the young roots are gathered and are said to be excellent food when cooked like carrots. We cannot vouch for this fact.

Through modern horticultural methods a number of improved varieties have been established. Chief among these are Witlof or French Endive and the large-rooted Barbe de Capucin, both popular winter vegetables used in making salads. Their seeds are listed by American dealers and are grown extensively in the vicinity of our larger cities.

Chicory is best known as a substitute or adulterant for coffee. It is a blend to be used with, rather than as a "substitute" for, coffee, and for this purpose it is grown on a large scale both in Europe and in this country. The large-rooted varieties are selected and their cultivation and their subsequent



THE SEEDS OF THE CHICORY

Some of these landed in this country a century or more ago, coming in ships' ballast, which was then earth or gravel

value in certain human ills. For centuries the seeds have been used in love potions. It is a plant remarkable for its varied uses, interesting history and surprising beauty.

processing are much like those followed in the sugar beet industry. One of the largest factories in this country for processing chicory is located in Michigan. It has a capacity for handling a crop from 9000 acres. Before 1914 this country imported from Europe, for making coffee blends, more than two million pounds annually.

Chicory has been recommended as a forage plant for cattle and sheep, but its bitter milky juice renders it unfit for this purpose. It is said to have medicinal

The Harassed Sphinx

By S. F. AARON

IN THE many descriptions of and references to the parasitization of the tomato and tobacco worm, the larva of the well-known, six-spotted humming-bird hawk moth, there seems to be no detailed description of the direct and highly tragic attack of the tiny wasp upon its enormous victim.

There is as much relative difference in size between the wasp and the big worm as between a mouse and an elephant, even more. Although the little parasite has wings and may attack the caterpillar without warning, at any part of its big, clumsy body, the latter does not seem to fear it as the elephant is said to dread a mouse.

Not until the tiny hymenopteran alights on its intended victim does the big worm seem to know it is about. Instinct then plays a remarkable part. Before the sharp ovipositor of the wasp can begin to penetrate the tough skin of the sphinx the great fore end of half a dozen segments swings around with a jerk and a speed that may not be thought possible. There is danger that the small attacker may be crushed or seized in the powerful jaws. But swift wings are emergency life savers. The little wasp just gets away before the big head and body are fully doubled back. It hovers, ready to renew its effort. The body of the host that alone will enable it to continue its species must be reached.

Back comes the wasp with tireless persistence. Finally,



A MUCH ENLARGED VIEW OF THE WASP THAT LAYS ITS EGGS IN THE BODY OF THE TOMATO SPHINX CATERPILLAR

At the top, right, is the fore part of the caterpillar on which the tiny parasite has made a safe landing and is busily laying its eggs. At the right is an enlarged cocoon of the wasp larva opened by the escaping adult



when the larva has crawled on and intervening leaf stems or small branches interrupt the swing of the big body, the ovipositor is quickly inserted. The parasite fly then withdraws and pursues its winged journey, leaving behind between fifty and a hundred eggs. There must be a veritable stream of these minute, oblong white pellets through that small tube in the brief time that the little wasp holds its place upon the huge body of the caterpillar.



TOO GOOD A FRIEND FOR A THANKSGIVING DINNER

Photograph by H. Armstrong Roberts

Some Frogs



The Leopard Frog is not only the best known frog in this country but is one of the handsomest. It frequently travels considerable distances from its home pool or swamp. Photograph by Lynwood M. Chace. At the left is a small bullfrog, the species whose hoarse-toned song, far-carried, suggests the roar of a restless bull. Photograph by Klugh. Down in the left corner is a life-size picture of the interesting little spring peeper, the first to pipe up even before winter has entirely left us, but whose piping gives us promise that spring is not far away. Below we find the Alligator Frog, *Rana heckscheri*, an inhabitant of the Southeastern States. This frog not only lives in close association with the alligator but has a voice strangely similar to the roar of the huge saurian. Photograph by

Francis Harper.



The Robin in the Window

Recorded and Photographed

By WILMER T. FOX

WHEN a robin built her nest on the window ledge of the guest room and dwelt there for a month, she caused more excitement and aroused a greater interest than the family had experienced in years. The nest, when discovered, was completed and ready for occupancy, and was so located as to give the family a wonderful opportunity to observe the family life of this friendly bird. Opportunely, a new camera had just been purchased; here was an unusual chance to test its capacities and to tax the skill of its owner. The photographic difficulties were numerous. The nest was located on the shady side of the window, and the low and wide overhanging eaves further reduced the available light. The wind persisted in blowing the loose grass in the nest so that sharp focus had to be sacrificed for speed, even though Nature was assisted by the light from a sun-ray lamp never intended for photographic use.

The structural details of the nest were not observed, for, secure behind the drawn shade, the robins had completed the nest and so cleverly hidden the thick mud interior that its presence was not suspected until a month's hard usage had worn away the covering of grass on the inside of the nest. With the exception of a few clippings from the barberry bushes in the yard, the nest was woven from long, coarse grass. Two days after its discovery a beautiful robin's-blue egg was deposited and an additional egg was laid each day until a total of four graced the nest.







Four eggs in the nest, and then began the tedious process of sitting. One week later three tiny robins, naked, except for a few hairs, emerged from the eggs, and the next day the fourth young one appeared. Now the taking of pictures grievously offended the mother bird, and the father also appeared to defend the youngsters from these prying humans. Only one day, however, was needed for the mother to become reconciled.

For twelve days the parents were busy bringing worm after worm for their progeny. The little fellows grew rapidly, having

tremendous appetites. It seemed as though the old birds warned the youngsters not to accept food from others, but they found it a temptation and often one or the other was pleased to accept a fat angleworm. Once all four were hungry at the same time and all four mouths were opened wide, as one will see on the page at the left.

Finally came the time to leave the nest and we see on this page the young robins launched upon the world, encountering friendly human hands and the excitement of a bird bath.





The *Aristolochia* or insect-catching goose plant is a native of the tropics. Let the unwary insect enter it for its sweet lure and the plant closes tight and proceeds to digest its prey. Here the flower is propped open with a stick. Photograph by Ewing Galloway.



Rafflesia is reputed to be the largest flower in the world. When the blossom is open it has a diameter of three feet. It grows as a parasite on the roots of trees and dies when removed from its original source of nutriment. Found in Sumatra. Photograph by Ewing Galloway.



Less man-like in general than the Gorilla or the Chimpanzee, the Orang-utan most closely approaches him in intelligence. Both pictures at the left are portraits of this species, the one at the lower left being a female. Below are a ring-tailed Lemur and her babies. The Lemurs are interesting animals that resemble the monkeys in the formation of hands and feet. At the bottom center of the page is a close-up of the Chimpanzee who most closely resembles man in bodily structure and appearance, if not intelligence and size. The Chimpanzee is found only in Africa.

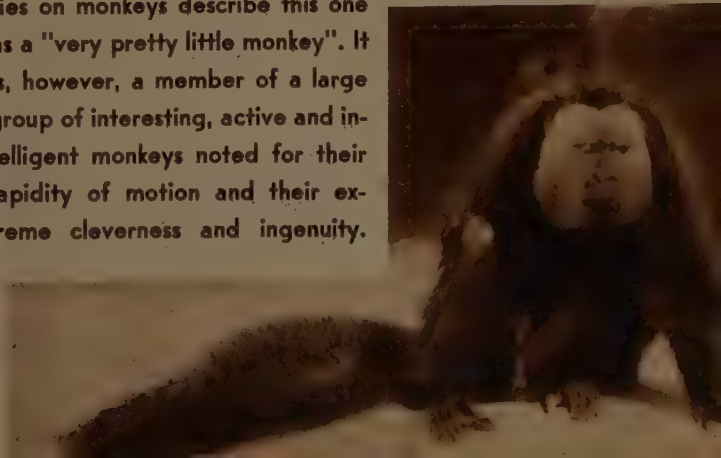




At left is one of the Gibbons, one of the long-armed and tailless man-like apes. They live in the tropical forests of southern Asia and are noted for their skill as tree-climbers, a necessary ability in their entirely arboreal life. Above is a Gelada Baboon, a dweller of the East African jungle and an animal rarely seen in its natural habitat. At the right is the striking white-tailed Guereza. At the left is the sacred Baboon, or Chacma of South Africa, large and strong apes that are not frequently captured.



The Baboons are the most interesting of the apes in their wild state. The handsome and companionable looking fellow below is the white-headed Saki from Brazil. Apparently the picture does not do it entire justice because the authorities on monkeys describe this one as a "very pretty little monkey". It is, however, a member of a large group of interesting, active and intelligent monkeys noted for their rapidity of motion and their extreme cleverness and ingenuity.





Among the coast redwoods of northern California we find a forest primeval. Here is the undergrowth in Mill Creek Flat. It is for the preservation to posterity of such areas as this that the Save the Redwoods League has been conducting an unremitting campaign. Now many splendid areas have been preserved from lumbering and have been consolidated into a State Park where one and all may gain inspiration from

What of the Forest?

Gradually, during the past ten years, Americans have been becoming more and more "forestry-minded." They have learned to appreciate to an increasing degree the tremendous importance of forests, not only as a source of wood products but in the protection of water supply, the prevention of erosion and as a place for recreation. More recently the operation of the Civilian Conservation Corps has turned the attention of many more people to forests and forestry.

With all this, it is well for us to consider what nations with scant forest areas face, and to realize what such places as the town forest of Heidelberg, Germany (at the right), established in 1392, mean to the people of that city, or how thoroughly the people of Switzerland realize the vital importance of forest protection for such mountain slopes as we see, graphically shown, below.





We in America, at least, should be glad that our women do not have to work as does this peasant woman of Saxony, who collects tree tops and branch-wood in the wake of a lumbering operation. As soon as she hears that some timber is being cut she bids for the waste wood, gathering it for her home uses and selling any surplus to neighbors.



Neither do the women of America bring home on their heads bundles of wood such as are laboriously collected in the chestnut forests or olive groves by the Italian women shown above, nor need we go to the town forest each Saturday and collect the fuel wood as does this Swiss peasant couple, or the citizen of Darmstadt, Germany, at the left. In many of the European town forests one or two days each week are set aside when dead and waste wood may be obtained free.

There are three more scenes that graphically show the vast importance of forests. First is a French home in the "sandy Landes" region of France where large sums have been spent to arrest the movement of sand. The planting of pines in this section is one of the leading reforestation projects in the world. Without the protection of growing trees the sand, moved by the winds, creeps in, gradually burying beneath it houses and whole villages. In the vicinity of the unique French town of Mimizan many homes have been thus surrendered to the sands; the recent drought and dust storms in our own West have shown the tragic results of the lack of forests.

Shifting our attention to Finland we find one of the wood houses common along the route of the Finnish railroads. Little or no coal is available and about four million cords of birch wood are used annually to stoke the engines. Nearly all of the major railroad stations are large wood yards, the engine wood usually being seasoned for a year before it is ready for use.

Finally we see a typical Dutch woods crew at work cutting pine saplings near Arnheim, Holland. The demand for wood is so great and the sources of supply so few and so overtaxed that plantings are harvested before the trees have had time to grow to a size that Americans would regard as a tree. A use is found for every little stick of wood. Even the shoes that the woodsmen wear at their work are made of wood.





At the left is an attractive roadside planting near Arnheim, Holland, in which country some of the most beautiful roadside tree plantings in the world have been accomplished.

Below, at the left, we see a group of Finnish peasant women working in a forest tree nursery. Practically all reforestation work in Finland is done by women, who also take an active part in lumbering operations. In many of the wood-using industries half of the labor is done by the "weaker" sex.



Above, a group of thrifty German girls are bringing home bundles of spruce and fir twigs from the Black Forest. They live in Forbach, which boasts one of the oldest of the town forests. At the left two French women are raking pine needles as stable litter and for garden fertilizer. In the great "Landes" pineries enormous quantities of pine needles are gathered annually. There is no waste of forest resources, even of the leaves.



WISTFULNESS

SOME STUDIES
of
ANIMAL
FACES



EAGERNESS



WISDOM



RAUCOUSNESS



PETULANCE



FRIGHT



CURIOSITY



BOREDOM



DIGNITY



ANTICIPATION



GRIEF



PRISSINESS



COYNESS



LAUGHTER



GUILE



INNOCENCE



BASHFULNESS



CRUELTY



SARDONIC HUMOR

Is the Coast of New Jersey Sinking?

By HORACE G. RICHARDS

New Jersey State Museum, Trenton

RELIC OF A MEADOW THAT ONCE WAS

Old sod of what had at one time been a field at Cape May, New Jersey. Now it is usually under water



ANYONE who has lived for any length of time along the New Jersey coast knows that in many places the sea is gradually encroaching upon the land. Some years ago scientists were of the belief that the land was actually sinking. In 1856 Dr. George Cook, then New Jersey State Geologist, presented evidence that he thought showed that the coast of Cape May County was actually sinking at the rate of two feet a century or one quarter of an inch a year. He pointed to a number of places along the coast where the land formerly extended considerably farther seaward. He also noted the presence of many stumps along the beaches and under the meadows indicating, supposedly, a change of level of the land. Later he extended his observations and conclusions to other parts of New Jersey and to Long Island.

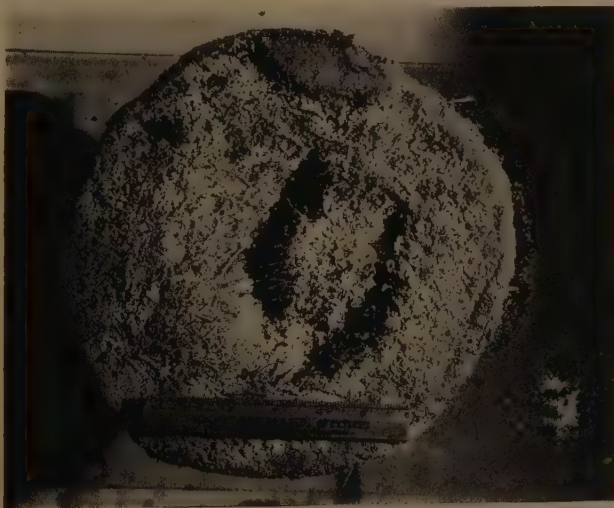
More recently, however, it has been shown that these changes may have been brought about by factors other than the subsidence of the land, mainly the erosive action of the waves and currents on the sandy beaches. Dr. Douglas Johnson, of Columbia University, who has studied the situation thoroughly, says that the evidence favors the unusual stability of the land during the past few thousand years.

The State of New Jersey has studied this matter extensively, and has published a number of reports on the subject. An especially thorough one, published in 1922, concludes: "that there has been no material change in sea level within historic times." There has,

however, been considerable fluctuation in the shore line even within very recent years. Many people can remember when there was farm land at Cape May almost a mile to the seaward of the present shore line. On the other hand there are many residents of Atlantic City who can recall when the lighthouse, which is now more than two long city blocks from the beach, was directly on the water. The above-mentioned report sums up the evidence by stating that 3025 acres have been added by the tides and that 5220.5 acres have been eroded. These fluctuations, they explain, are entirely due to the action of the waves.

They have mapped rather accurately the changes in the coast line from 1839 to 1924. The farther back that we go, the less reliable are the maps and no very careful study is possible from maps earlier than 1839. However, a somewhat cursory study of some maps published prior to this date and a perusal of some early historical documents indicate clearly that a great deal of land, especially on the Cape May Peninsula, had been eroded even before 1839. Several maps suggest that Prissy Wicks Shoal, now ten feet deep and lying about half a mile offshore, was at that time part of the mainland and connected to the present mainland by a road.

At a number of places along the coast the wearing away of the beaches has exposed old salt meadow sod on the ocean shore. Since there is no such sod along the shore line out-



REMINDER OF A HORSE LONG GONE

Foot-print in sod uncovered by a storm at Cape May Point and indicating where the land once was

side the beaches to-day, this sod must have grown there when it was part of the meadow between the beach and the upland, thus indicating a considerable change in the position of the shore line. Similar sod can be seen along the coast of Delaware, South Carolina and elsewhere. Large pieces of this sod have been dredged three miles off Sea Isle City, New Jersey, in forty feet of water. It is, of course, possible that these pieces had been washed out to sea from the shore, but the size and irregular shape of the pieces brought up by the dredge suggest that they were part of the sea bottom, thus indicating a three-mile change in the position of the shore line. Much of this sod contains the roots of grasses and other plants and the stumps of old trees, suggesting that the region at one time supported an upland association and, perhaps, even a heavy forestation.

At Cape May, one occasionally hears the story that after severe storms large patches of this sod are uncovered near low tide mark on the beach close to the Cape May Point Coast Guard Station, and that one can actually see the remains of the old corduroy road leading from the present shore line out to sea in the direction of Prissy Wicks Shoal, a mile or less distant. Incredible as this may appear to be, this road was clearly visible after the heavy seas of early January, 1931, and after a "northeast" of April of the same year, and has been seen many times during 1932. Tradition says that less than one hundred years ago Prissy Wicks Shoal was above water and was separated from the present shore line by low-lying land and that it was possibly the site of the original Cape May Lighthouse. This corduroy road is approximately in the position of the road shown on the old maps. It therefore seems quite probable that this corduroy road is the old road leading to the now submerged Prissy Wicks Shoal.

Seashore residents also tell that one occasionally sees the footprints of cattle and horses in this sod when the surface sand has been removed by the waves. In fact the New Jersey Geological Survey Report for 1882 reported that after the severe storms of September 21, 22 and 23, 1882, the sod exposed south of Harvey Cedars, Long Beach Island, New Jersey, was plainly marked with the traces of horses and cattle. The horse tracks were of various but rather small hoofs and without shoes, and the cattle tracks were also of various sizes. They were found in a patch of meadow sod about three feet below ordinary highwater mark; the sod extended back under the hillocks of beach sand.

At that time (1882) that part of the beach had few, if any, domestic animals on it, but in 1690 when it was

settled, horses and cattle were kept on the island, which at that time extended considerably farther out to sea.

Similar tracks have been reported a number of times near Cape May after severe storms. On April 6, 1931, after the same northeast storm that exposed the corduroy road, a patch of sod about one tenth of a mile west of

the road, was exposed, and on it were several horse foot-prints. As far as could be learned, this patch of sod had not been uncovered for at least several years. The fact that these tracks were of shod horses, while those reported at Harvey Cedars were of unshod animals, suggests that these tracks may not be as old as those previously seen. Nevertheless, the fact that these tracks have persisted in this sod superimposed by a thin layer of sand and covered by the



STUMP OF AN ANCIENT RED CEDAR

This was exposed by the storm of January, 1933. Before the storm the stump was covered by a street at Cape May Point

sea twice a day seems interesting and suggestive of how fossils are actually preserved. These horse tracks may possibly be regarded as "fossils in the making."

No matter whether we accept the interpretation that the land is sinking or whether we prefer to accept the more recent view that the changes in shore line are due mainly to the erosive action of the waves, the occurrence of this old meadow sod remains as undeniable evidence of marked changes in the position of the shore line along this coast.

When we say that the land may have been stationary in historical time, we must not confuse historical time with geological time. Practically all geologists agree that in Glacial Time the shore line of New Jersey was many miles out to sea and that since that time the shore line has been moving landwards (due to the melting of the glaciers and the return of the water to the sea, causing sea level to rise and flood the land). It is extremely difficult to tell whether sea level is still rising. If it is, or if the land is sinking, it is doing so extremely slowly and by no means with the speed indicated by Dr. Cook eighty years ago.

Archaeological evidence, such as the finding of Indian shell heaps below the surface, suggests that a certain amount of subsidence may have taken place and work recently reported by Dr. W. F. Cheney at the meeting of the American Association for the Advancement of Science at Atlantic City, also suggests a slight subsidence at certain places along the Atlantic Coast, so all has not yet been said on the matter.

If, as some tell us, we have passed through a glacial stage and are approaching another interglacial warm stage, it is probably true that the sea level is rising and in many thousands of years the water will cover the margins of our seacoast, but this is a slow process and the main cause of the loss of New Jersey shore is the erosive action of waves.

GRANDFATHER OF THE PINES

By ALMA CHESNUT

IT WAS on the road to Windsor Castle, in England, that I first met the Grandfather of the Pines. I had been contemplating the pleasant monotony of the countryside, with its woodlands of oak and beech, ash and plane and linden, when suddenly I was jolted out of reverie by a spectre of a tree that seemed to be leering down at me from over a garden wall.

With sinuous, sweeping branches, uptilted at the ends and intricately interlaced, it dominated all the other trees with its dark foliage. Involuntarily I shuddered; the tree seemed to have a life and movement of its own. I turned quickly to see if my companion had been affected and found him staring as if at an apparition.

In London inquiries revealed that this was *Araucaria imbricata*, the Chile pine, and that it is truly a ghost tree out of the unremembered past. Of lineage ancient as the ginkgo, it grew in the Dawn Age beside giant ferns, horse tails and cycads. Its remains have been widely traced in rocks of the Carboniferous era. Leviathan reptile forms must have slithered about its twisted roots.

Reptiles! Yes, it was the thought of them that gave the clue to the strange emotions *Araucaria* inspired in me. Those twisting branches, thickened at the ends and uplifted; those glossy leaves, overlapping one another like scales!

An immigrant from South Chile, *Araucaria imbricata* is widely grown in the British Isles and is known also on the Continent. I found it in the formal gardens of France, in England, Scotland, Wales and Ireland. The British call it "Monkey Puzzle," a name conferred upon it by a man in Cornwall years ago.

It derives its scientific name from Arauco, or Araucania, the district in South Chile where it was first discovered, and its romantic history is intertwined with that of the Araucanians, a proud and warlike race of Chilean aborigines. Like them, it too has suffered at the hands of white conquerors. Where once its stately forests flowed down the slopes of the snow-capped Andes, it is rarely seen today and may soon be extinct.

The followers of Valdivia, famous conqueror of Chile, probably were the first white men to look upon this



strange tree in all its majesty of lofty grandeur and age. In coats of mail, with plumes and banners flying, they had started out from the Inca country in 1540, bent upon gold and conquest, at the behest of Francisco Pizarro, the great Conquistador. Across the vast tableland they had gone, following the military road of the Incas, farther than Almagro had penetrated, farther even than the famous Topa Inca Yupanqui, who, a century before, had fixed the boundary of his empire at the River Maule.

Through sinuous mountain defiles, round the sides of dizzy ravines, past rivers that flung their waters furiously down the mountainsides, through endless forests and across desolate, wind swept plateaus, he had led his men through the wild Cordilleras into the Land of Arauco.

It was at the hands of the freedom-loving Araucanians that Inca Yupanqui had met defeat and it was the Araucanians who, in 1551, meted out to Valdivia a death of horror. Perhaps in the very forests where the Chile pine then grew in its primitive splendor, Lautaro, the eighteen-year-old military genius of the Indians, led his warriors in fierce combat. For these were the forests most cherished by the Indians. This tree was their palm; it nourished them and succored them and it furnished drink for their festivals.

Not a Spaniard survived to tell the story of that battle, though the 200-year war of these Indians for their in-

dependence is the theme of Ercilla's "Araucana," the celebrated Castilian epic. But perhaps we digress.

The native habitat of *Araucaria imbricata* lies along the western slopes of the South Chilean Andes, about 37 degrees latitude. Large forests once grew on the mountains Caramavida and Naguelbuta, where the soil, though rocky, is wet and boggy in stretches due to plentiful rain and snow. The Indians said that the trees never grew lower than from 1500 to 2000 feet below the snow-line, though they frequently reached up to it, and that they

Other seeds were brought to the country in 1844 by a collector for a nursery firm, and the climate being favorable, the "monkey puzzle" soon became well known.

Araucaria imbricata, at first glance, seems to be Nature's original jig-saw puzzle. The branches twist in every direction, apparently without a thought of symmetry, yet actually the tree grows in a symmetrical pattern. It has many uses and, unquestionably, as the ancestor of the pines and one of the few survivors of the Jurassic Period, it is one of the most interesting trees on earth.

In Chile it grows to a height of 150 feet and produces cones as large as a man's head. Like most primitive plants, the male and female blossoms occur on separate trees, although rarely they are found on the same one. The branches are arranged in whorls of six, seven and eight branches, the greatest number being nearest to the ground. They diminish in length and number as they reach the top, giving the tree a conical outline. The leader is stout and arrow-like.

One of the remarkable features of the tree is the leaves, which cover the branches in a scale-like formation. Pointed at the ends, they are nearly one and a half inches in length to three-quarters of an inch wide, dark green in color with a glossy surface. The base is of such tough and woody



ARAUCARIA AS A PART OF A LANDSCAPE SCHEME

In formal plantings the "one tree the monkey can't climb" grows full-branched and symmetrical, its twisting branches suggesting reptiles

were found only on the western slopes. They require plenty of air, sunlight and moisture and a climate not excessively cold.

After they had slaked their thirst for gold, the Spaniards interested themselves in this rare tree. A century-old volume tells how, in 1780, when they had settled in the vicinity of the Araucaria country, they employed Don Francisco Dendariarena to examine the forest and report the suitability of the trees for ship-building. The report must have been favorable because the account further relates that timber from the mountain forests was used afterward to repair a Spanish squadron at anchor in the Port of Telcahuano. Abbate Molina, at about this same time, catalogued it under the name *Pinus Araucaria* in his Civil and Natural History of Peru. In 1782 the Spanish Government commissioned Don Joseph Pavon to make researches. After a thorough study, during which he ascertained it to be a distinct genus, he gave the tree the name *Araucaria imbricata*. Specimen plants were sent to France and Spain.

To England in 1796 came six pioneer seedlings aboard a ship piloted by Captain Vancouver. Archibald Menzies had procured some *Araucaria* cones in Chile, sown seeds en route to England and arrived with baby trees. These were planted on a private estate and in Kew Gardens.

texture that only a sharp knife can sever the leaf from the branch. The leaves remain attached for several years. In trees up to about twelve years of age, the bark also is studded with leaves from the base upward.

Under forest conditions the tree is self-pruning, like most pines, and the boles are straight and pillar-like, free of knots and covered with a double layer of bark, each layer five or six inches thick. The inner bark is light and porous, the outer like cork, cleft in different directions. Both layers, like other parts of the tree, secrete abundant resin.

In England, *Araucaria* blossoms from September to November, the male catkins, four or five inches long, growing clusters of six and seven. The female blossoms are oval and occur at the ends of the branches. The great cones are dark brown with deciduous scales, each protecting two wedge-shaped seeds, covered with a thick hard scale. These are equipped with obsolete wings. The nuts, or seeds, are an inch and a half long and a single fruit contains two or three hundred. A mature tree produces as many as thirty cones.

"The wood is hard and durable, yellow-white and full of beauteous veins," Don Pavon reported to the Spanish Government. "It is capable of being polished and worked with facility. The resin is white, with an

odor not unlike frankincense and a taste not bad. It is used by the Indians as a plaster for contusions, sprains and rheumatic headaches.

"The Indians eat the fruit raw, boiled and roasted and distil a spirituous liquor therefrom. It is the palm of the Indians of the Chilean Andes. * * * Roasted, the kernels resemble chestnuts in flavor. For winter the nuts are dried, after being boiled, and flour and pastry are made from them. When scarcely matured and dried in the sun, a sugary substance exudes."

Don Pavon's report was the beginning of the death knell of the Chile pine. The towering boles were cut for masts and exploited also for furniture. A decade ago a thousand sawmills were in operation and the pines were so scarce that rumors of a forest still existing on somebody's farm stirred interest. A particularly vicious method of timber cutting, known as *rosar a juego*, was being practised. In winter the climbing bamboos, bindweeds and smaller trees were cut and left to dry. In February the woods were fired and the dead mass burned. The growing trees were then cut and sent down to the sawmills. And the Chilean Government at about this same time was beginning to wonder about its water supply and the possibility of reforestation to protect this supply.

Araucaria imbricata is a member of the tree family Araucarinae, of which there are a number of species, all found in the Southern Hemisphere, notably Chile, Brazil, Polynesia and Australia. They grow from 15 to 35 degrees below the equator and *imbricata* is the only one that will grow unprotected in Great Britain.

Fossil evidence shows that at one time in the world's history these trees were widespread and that they probably reached the peak of their development during the Jurassic Period. Certain fossil coniferae, found in Carboniferous limestone, have been given the names *Araucarites*, *Araucarioxylon*, and so on. All are closely related to the forms existing today.

Livingstone found them in abundance along the Zambesi River in South Africa and great trees of the same type have been unearthed in quarries around Edinburgh, Scotland. A British scientist, Dr. Lindley, writing a century ago of *Araucaria excelsus*, said:



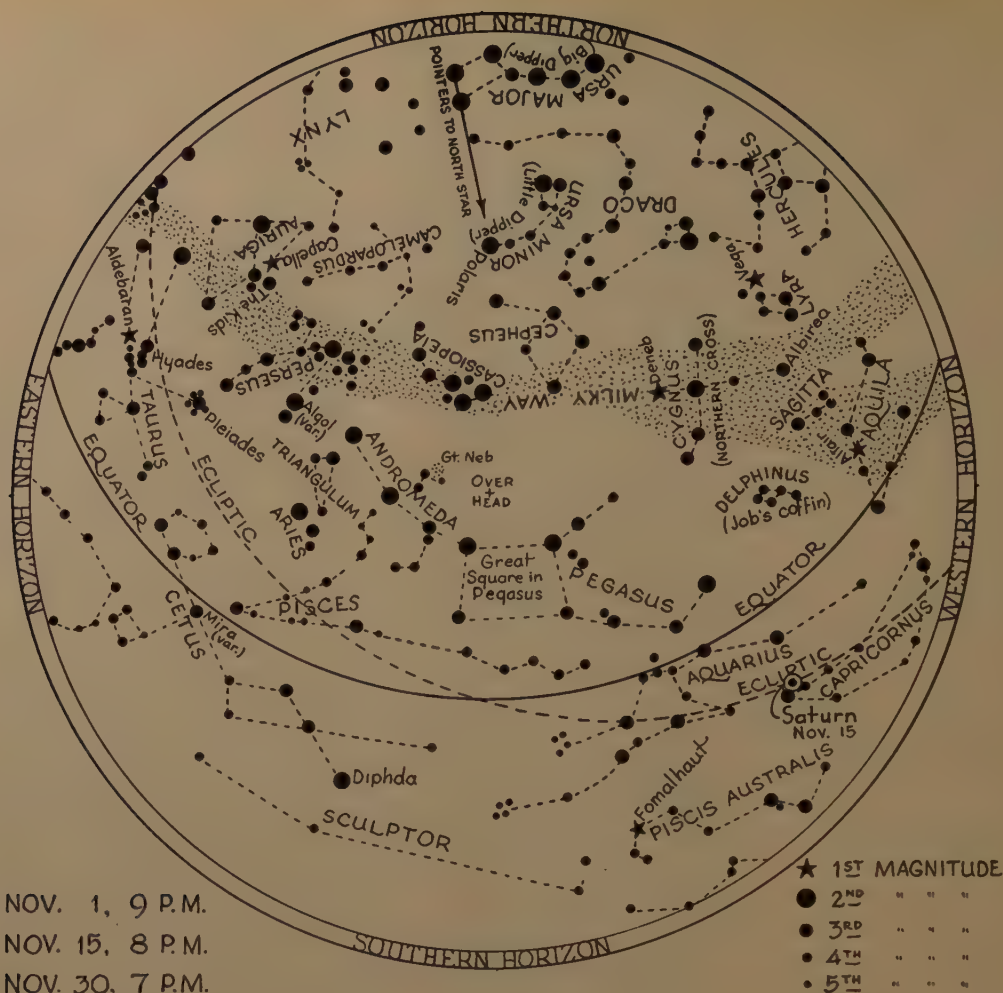
A CONE AS LARGE AS A MAN'S HEAD

This one measures eight by six inches and contains about two hundred edible seeds. Notice the scale-like leaves covering the twig tips

"It is highly probable that a plant very nearly the same as this *Araucaria* certainly once grew in Great Britain. Remains have been found in the lias of Dorsetshire and have been figured in the Fossil Flora under the name of *Araucaria primaeva*."

To some it may seem puzzling that a tree of sub-tropical origin finds the climate of Great Britain congenial. Sir Herbert Maxwell, author and tree lover, explains that the climate of South Chile and particularly the West of England is curiously similar, though from diametrically opposite causes. In Chile, he says, abundant moisture arises from the afflux of a cold ocean current upon a warm coast, whereas in the British Isles a warm ocean current flows upon a colder land.

An admirer of *Araucaria*, he regrets that the tree, though widespread, is not popular and believes this to be due to injudicious planting, but I offer my own reasons—the primeval mystery it conjures and, more to the point, that it definitely suggests (Continued on page 235)



To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

The Twenty Brightest Stars

Famous suns that everyone should know

By ISABEL M. LEWIS

AMONG the several thousand million stars, at least, that exist in the heavens there are between six thousand and seven thousand that can be seen without the aid of a telescope on a clear, moonless night. Only one-half of this number are above the horizon at any one time and place. The great majority of these, by far, are faint stars near the limit of visibility for the naked eye. Bright moonlight or atmospheric haze will blot out the light of these fainter stars. Though we get the impression that the stars are countless the number that we actually see on a clear night when we look upward at the heavens is less than four thousand under the best of seeing conditions.

Of these several thousand stars that we may see without optical aid there are twenty that are outstanding and that everyone who has any interest at all in the heavens

should know by sight whenever visible. Most of them are bright because they are so near, though several are giant suns of great size or exceptional luminosity. Let us introduce them now by name in the order of their apparent brightness.

Sirius, the brightest of all the stars, is known also as Alpha Canis Majoris; that is, it is the star Alpha of the constellation Canis Major, The Greater Dog. It is a beautiful white star and its distance from the earth is about nine light years. It may be seen in the evening sky from December to May, following close upon the heels of Orion.

Canopus, second to Sirius in brightness, cannot be seen in the United States north of the thirty-seventh parallel of latitude. It is a magnificent diamond-like star and has been called "The Star of Egypt." It may be seen in the

evening in the southern states only for a short time in February near the southern horizon. It is in the southern constellation of Argo Navis and is also called Alpha Argus, or Alpha Carinae, that is Alpha, in The Ship Argo, or in The Keel (of the ship Argo Navis). Argo Navis represents the Ship of the Argonauts and it is by far the largest and finest constellation of the southern hemisphere. Canopus is a giant sun more than 650 light years distant from the earth. In true or intrinsic brightness it dwarfs Sirius into insignificance, and, in fact, surpasses all of the other twenty brightest stars.

Nearest to Sirius and Canopus in apparent brightness, but noticeably inferior to them are, in the order of their relative brightness, Alpha Centauri, Vega, Capella, Arcturus and Rigel.

Alpha Centauri is only four and one-third light years from the earth and the nearest to it of all the twenty brightest stars. Until a few years ago it was believed to be the nearest of *all* the stars, but it is now known that the faint telescopic star, Proxima Centauri, not far distant from Alpha Centauri, is a small fraction of a light year nearer to the earth. It is a yellowish star in the southern constellation of The Centaur and cannot be seen north of the thirtieth parallel.

Vega, Capella, Arcturus and Rigel are all visible in northern latitudes and differ very little from one another or from Alpha Centauri in brightness. Vega is the brilliant, bluish-white star known also as Alpha Lyrae. It is only twenty-six light years distant from the earth and it may be seen in the evening sky from April to January. Vega, Capella and Arcturus are considered the finest stars north of the celestial equator. Capella is the beautiful yellow star in the constellation of Auriga, the Charioteer, and is known also as Alpha Aurigae. It is a giant star of the same type as our own sun, which is only a dwarf star. It is distant about 43 light years. Arcturus is the fine reddish-orange star in Boötes, The Herdsman, visible from April to October in the evening sky. It is 40 light years distant from the earth and is always a strikingly beautiful object in the evening sky in summer because of its unusual color and great brilliancy. Rigel is the brightest star in Orion and is also known as Beta Orionis. It is visible in all parts of the earth except near the north pole and is above the horizon in the evening from November to May. Like Canopus it is one of the hottest and most luminous of all the stars. It is a beautiful bluish-white in color and it is at a distance of about 550 light years.

Procyon, or Alpha Canis Minoris, in the constellation of The Lesser Dog, follows along with Sirius, The Greater Dog-star, after Orion. As he is farther north he is visible in May after Sirius has disappeared in the west. Procyon is only ten light years distant from the earth. Achernar, which means "End of The River" is the star far down in the southern hemisphere at the end of The Sky River, Eridanus, which comes as far north as Orion. Achernar is a white star nearly equal to Procyon in brightness. Like Canopus and Alpha Centauri it is visible only in the southern states. It is at a distance of about 67 light years, and an interesting member of this celestial group.

The stars that we have named so far are the stars that are brighter than standard first magnitude stars. The remaining members of this select group named in the order of their brightness as first magnitude stars are Altair, in the constellation of Aquila; Beta Centauri, in the southern hemisphere; Alpha Crucis, a double star in the Southern Cross; Betelgeuse, or Alpha Orionis, which is variable in light and a giant, red star in Orion; Aldebaran, or Alpha Tauri, a red star in The Hyades, in Taurus, a winter constellation; Spica, in Virgo; Pollux in Gemini, Antares, in Scorpio; Fomalhaut, in The Southern Fish; Deneb, or Arided, in Cygnus, and Regulus, in Leo. Of these stars Antares is the giant with a diameter of 400,000,000 miles, although Betelgeuse is also a red giant with a diameter of about 250,000,000 miles. Deneb is a giant white star of great luminosity at a distance of 650 light years. Fomalhaut, a beautiful white star, visible only in the fall, in the southern sky, is only 24 light years distant. Spica is a brilliant sun of great luminosity so far away that its light takes three and a half centuries to travel to the earth. It appears, with Regulus in The Sickle, in Leo, and Arcturus, in Boötes, in the early spring. Regulus and Aldebaran are both about 55 light years distant from the earth.

Pollux and Castor are the Twins in Gemini. Castor is a second magnitude star but is known as Alpha Geminorum, while Pollux is Beta Geminorum. This is unusual as the brightest star in a constellation is usually called Alpha. It is suspected that the relative brightness of these two stars may have changed. Pollux is about 32 light years from the earth.

It may aid us in identifying some of these brightest stars to remember some of the following facts:—that two faint stars make a little equal-sided triangle with Vega; that Capella has her little group of The Kids, composed of three faint stars close by; that the stars in the belt of Orion point downward toward Sirius; that Aldebaran is one of the end stars in the V of the Hyades, and that Betelgeuse, Sirius and Procyon are at the corners of a great equilateral triangle. Pollux and Castor are only a few degrees apart and quite twin-like in appearance.

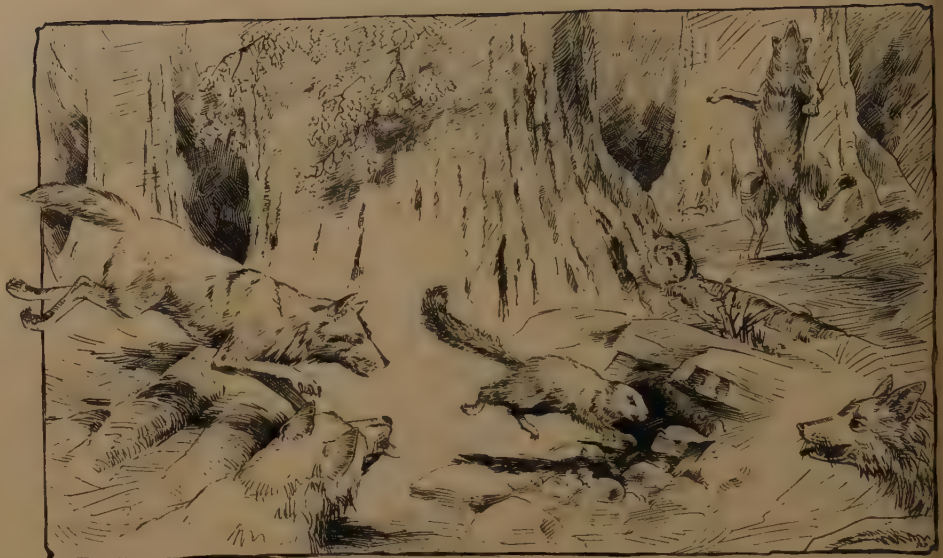
This is one of the months when meteors are prevalent. Watch for the Leonides about November 15 in the early morning hours, or after midnight. True Leonids are swiftly moving and leave vivid, bluish streaks. Also look for the slowly moving, reddish Andromedes about November 20-30. They appear in the early evening hours.

Saturn is in Capricornus and in fine position for observation in the evening sky. Mercury reaches its greatest western elongation on November 19 when it will be visible in the morning twilight close to Jupiter, with which it will be in conjunction on November 20. Venus is close to the sun this month and not favorably placed for observation. It comes into superior conjunction with the sun on November 18, and, after that, passes to the western evening sky. Jupiter also is too close to the sun to be seen early this month. It may be seen in the morning sky toward the end of the month. Mars is in Leo all of the month and is a morning star east of Regulus.

How the Groundhog Got His Short Tail

(A Cherokee Indian Myth)

Retold by
DOROTHY E.
PLETCHER



THE STORIES THAT THE MOTHERS OF LITTLE INDIANS TOLD THEM ABOUT THE BIRDS AND THE ANIMALS AND THE FLOWERS AND THE FISHES ARE ALL INTERESTING. OF COURSE THEY ARE ALL JUST STORIES BUT THEY DID TEACH THE CHILDREN THINGS ABOUT NATURE. THIS STORY IS THE FIRST OF A GROUP OF INDIAN NATURE MYTHS. IN THE PICTURE ABOVE WE SEE THE GROUNDHOG DASHING FOR HIS HOLE AFTER FOOLING THE HUNGRY WOLVES BY HAVING THEM DANCE. IN FACT, ONE OF THE WOLVES IS STILL TO BE SEEN DANCING ON HIS HIND LEGS

ONE bright sunny morning seven wolves were roving about. And how hungry they were! "Ho! ho! look here," cried one of them. "If it isn't Mr. Groundhog himself resting here in the shade." With that the others hurried up, and sure enough, they had caught a Groundhog.

"What a good dinner you will be for us," they laughed, showing their sharp teeth.

"When we find good food we must rejoice over it," exclaimed the Groundhog. That is the way the Indian people do in the Green-corn dance. I know you are planning to kill me. However, if you want to dance, I'll sing for you. This is a brand new dance. I'll lean up against seven trees in turn and sing. You will dance out and then turn and come back as I give the signal. At the seventh turn you may kill me."

Although the wolves were very hungry they agreed to the Groundhog's suggestion for they did like to dance. Leaning against a tree the Groundhog sang, "Ha wiye ehi". All the wolves danced out in front, until he gave the signal, "Yu!" and

began with "Hi yagu we", when they turned and danced back in line.

"That's splendid," said the Groundhog. Then he went over to the next tree and started the second song. The wolves danced merrily as they had at the first tree. "Well, well, that IS fine," cried the Groundhog, as he moved along to the third tree. The wolves were dancing more and more merrily, and the Groundhog kept on praising them. You see, the sly fellow was moving nearer and nearer to his hole under an old stump.

At the seventh song he said, "Now, this is the last dance. When I say "Yu!" you may turn and come after me. The one who gets me may have me." So he began the seventh song and sang lustily until the wolves were away out in front. Then he shouted "Yu!" and leaped for his hole.

The wolves all dashed after him, but he reached the hole first and jumped in. Just as he got inside, the wolf leader caught him by the tail and gave it a hard jerk. It broke off, and the Groundhog has had a short tail ever since.

The Romance of Douglas Fir

By RUTH SMITH

DOUGLAS FIR lived on the cool, shady side of a tall hill among many other hills. His mother, who retained her love for her foreign ancestors, often called him *Pseudotsuga taxifolia*. That was too difficult for his many sisters and brothers, cousins, aunts, uncles and friends. Douglas' father and mother were very proud of him, their first born. He tried hard to justify this pride by keeping his hair glossy and smooth; his limbs sturdy, athletic and always erect, so that he would grow to be tall and straight. He was a handsome youth.

The Fir families knew their neighbors at the foot of the hill—the Colorado blue spruces—but never went down to visit them, and the spruces seldom came up the hill. However, there was always a real friendship between the families.

When Douglas grew to manhood, he became fond of a lady fir who had grown upon a nearby hill. Dot and Douglas were constant companions for years. She, too, had been a dutiful child and was now a tall, straight, beautiful maiden. The two were outstanding among the young trees of that region, and were even envied at times by their less attractive friends. But Dot and Douglas were not vain, although they were prideful and desirous of maintaining the good family name.

One day after Douglas had reached his fortieth birthday, some city people stopped at the foot of the hill to fish. Fishing was good in the brook which babbled by the spruces. The city people made a good catch by noon and because fishing creates good appetites, all thoughts naturally turned to a "fish fry." Dry wood was brought and a hot fire built; then, pans and skillets were brought out and preparations made for a feast.

Dot and Douglas watched the city people with much interest. They enjoyed the flames that leaped about the skillets of fiercely frying fish, the



DOUGLAS LIVED ON A SHADY HILL

Then the city people came and built a fire, and now a lone tree stands in the midst of a wilderness

aroma of steaming coffee, and the noisy chatter which drifted to their ears. When the sun sank below a hill, the city people gathered their lunch things into a car and were soon on the road back home. They had had a happy day in the forest.



That night, Dot and Douglas awoke with a start. What could that noise be? Why was it so warm? Wouldn't a drink taste good? Then they realized what had happened. While they slept, a playful breeze fanned the city people's fire into the spruces. Because it loved freedom it kept running up hill and soon reached the home of the firs. No friends of the forest saw that fire, so it kept on until morning.

Douglas was so choked with smoke most of the time, that his attention was diverted from Dot. When the great sun rose quietly over the horizon the following morning, Dot was not in sight. He called hopefully for her, but his unanswered echo

was borne back to him. Then he realized that all the firs on his hillside had been burned to death. Only a few straggling limbs lay twisted and blackened where beautiful trees once stood. Douglas was alone. What a tragedy those city people had caused. He could not forget Dot. He was lonely.

Today, when you drive through the mountains, on that cool, shady, north hill you may see a lone fir tree. No new trees can grow for the fire destroyed the seed in the leaf litter. There is but one lone tree, tall and straight, but sad. The city people's camp fire had destroyed Dot and all the other firs, leaving only Douglas with empty arms to mark the place where a beautiful forest once grew.

THE SPIDER'S BUNGALOW *By* FLORENCE H. MOORE

"It must be fun," said Bobbie,
As he and Babs sat still
While Mr. Spider spun his web,
Above the wide, porch sill.

How nice for Mr. Spider too,
That he can travel anywhere—
Nor wonder where'll he'll sleep at night,
Without a thought of care.

For all he does is start
To spin some silken
thread,
Until he builds himself
a house,
Where he can lay his
head.

And every evening just
at dusk,
On his ladders and
trapeze,
He builds his airy, silken house,



And goes to sleep beneath the eaves.
PUZZLE: Find Miss Swallow and Mrs. Bat.

Oh Be Kind

By BLANCHARD KENNEDY

Be kind to little things that cry
Half-hidden in the grass,
Be kind to little things that fly
On wings of fragile glass—

For you'll find me some day, some day,
In such wee disguise,
Awatchin' you in mute dismay
Through a spider's gold-set eyes.

Key to Plants

Of all the many new books which appear from time to time on botanical subjects, it is only now and then that one of these possesses sufficient general interest to receive notice in NATURE MAGAZINE. However, there is a special feature in the excellent work, *A Textbook of Systematic Botany*, by Swingle, just issued in its 2nd edition by McGraw-Hill, New York, at \$2.25, which should be directed to the attention of all plant lovers. In addition to the character of subject matter, usually included in works of this type, this volume contains a most helpful chapter dealing critically with the literature of the subject. Consideration is given to the better works dealing with such themes as the botanical classics, fundamental principles, descriptive manuals, taxonomic treatment of limited groups, cultivated plants, and non-technical works and even paleobotany.

Safety for Waterfowl

We quote in part *American Field* of September 15, 1934:

"America's migratory waterfowl, this fall for the first time in history, have the right of way on two of their most important flyways, with better than a fifty-fifty chance of not striking up an acquaintance with hunters' shotguns en route. This is revealed in a survey of the new three-day week 'code' for duck hunting by the More Game Birds Foundation.

"A fitting together of the jig-saw puzzle of staggered hunting seasons just allotted thirty states shows that the U. S. Bureau of Biological Survey has given the drought-depleted wildfowl clear tracks all along the Pacific and Atlantic coasts four successive days of every week throughout the flight season."

Briefly, the Foundation asserts that the new regulations, which allow thirty shooting days to be divided into short periods, and alternated with rest days, provide a means by which the ducks can do all their traveling on shooting days, and all their feeding and sleeping on rest days, and thus make in safety a migratory flight that with the exercise of less intelligence would prove dangerous. This sophistry will surely deceive no intelligent person, but we note that even the more conservative sportsmen's magazines and news columns are giving free publicity to a cheap witticism that is decidedly out of place in relation to the murderous situation that our harassed waterfowl now face. The statement continues:

"Not only has the Biological Survey given the ducks and geese 'fair sailing' this fall, but hunting seasons at the coastal winter resorts have also been carefully established," the Foundation points out. "In southern California only two shooting days per week are permitted, and in Texas, Louisiana, the Carolinas and Virginia only three. The obvious impossibility of fixing a necessarily short general season of thirty continuous shooting days led to adoption of the staggered season this year. This represents a modification of the rest-day plan proposed by the Foundation in 1932. It should afford sportsmen the greatest amount of duck shooting advisable and at the same time prove a real conservation measure."

We are glad to see, however, that some conservation organizations have a saner outlook. The *Minnesota Conservationist*, organ of the Conservation Department of the State, where a strong sentiment for closing the season altogether was built up, calls baiting a "heinous practice" and condemns rest days, and a strung-out season, and concludes: "Thirty consecutive shooting days would be better if a decision is reached against an inviolate closed season."

And the *National Sportsman* for October, under the title "It Doesn't Check" reviews the inconsistencies between the evidences showing dire need for relief, and the staggered and rest-dated season. A few high lights must serve to show the trend of the argument:

"For years the Bureau of Biological Survey has been studying the American wildfowl situation. During the last five their reports have grown more discouraging. . . . The Biological Survey is manned by experienced and expert scientists, as well as practical sportsmen and sound conservationists. . . . Has no desire to curtail sport as a matter of whim. . . . Notwithstanding the fact that the Biological Survey is strong in its demands for a reduced kill during 1934, Secretary Wallace's Advisory Board voted for an intermittent season of thirty days, and a reduced bag limit only on such species of ducks as were actually in danger. There is also provision made for a continuation of baiting under prescribed stipulations. . . . Ten three-day weeks, or fifteen two-day weeks are going to offer more of an opportunity to get big season bags than a straight thirty-day season. . . . We are of the opinion that the Biological Survey itself is not wholly in accord with this desire. The only explanation to be found is that some selfish power used its influence to force through measures that are contrary to the general approval of the well-informed Bureau. . . . We are going to try to find out how the Advisory Board voted on this matter. It will make interesting reading."

Yes, the American Nature Association agrees that a report on how and why the Advisory Board voted as it did would be interesting. But we think that a careful scrutiny of the matter put out during the next few weeks by several so-called conservation organizations will indicate pretty accurately why the ducks got the worst end of the decision.

A Cat's Good Memory

We hear a great deal about the good memory of a dog, but not so much concerning that of a cat. An incident occurred recently which showed a remarkable memory on the part of a cat. Dick is a very large Maltese cat, much beloved by every member of the household. He is a house cat in the strictest sense, as he never goes out of doors, at least never since he came to live in the apartment, which was three years ago. About two weeks ago the family went vacationing, leaving Dick at home in the care of a friend. About a week after the departure of the family, Dick escaped from the home and immediately the news was heralded throughout the neighborhood and a reward was offered. Three days passed but no sign of Dick. Finally at midnight of the fourth day, he was discovered on the porch of a house where he had lived three years ago, but now occupied by strangers. R. S.

GRANDFATHER OF THE PINES

(Continued from page 229)

snakes. Looking at it you might not pin down your aversion instantly but your reaction would be the same as if you had inadvertently stumbled upon a nest of serpents. The older writers and botanists of England and Spain experienced this serpent-like spell of the *Araucarias*. Witness this extract from *Arboretum et Fructicetum Britannicum*, published in 1838:

"In young trees the branches, with their closely imbricated leaves, resemble snakes partly coiled around the trunk and stretching forth their long slender bodies in search of prey."

The roots fascinated Poeppig, pioneer explorer in the Andes of Chile and Peru.

"When we first arrived at the *Araucarias*," he wrote, "the sun had just set. Still some time remained, however, for their examination. What first struck our attention were the thick roots of these trees, which lie spread over the stony and nearly naked soil like gigantic serpents two or three feet in thickness."

A Fight for Life

W. N. Robinson of Cherokee, North Carolina, sends in the following incident, which he says is true and which was told to him. It appears that "it was on a hot dry June afternoon, in the Great Smoky Mountains, on the Cherokee Indian Reservation. A young cottontail rabbit hopped away from the watchful eye of its mother. The young explorer skipped along beneath the shade of the giant poplars, but suddenly it stopped and before it realized what had happened, the coils of a three-foot black snake twisted about its tiny body. In the moment of terrorized fright it emitted a sharp squeal—a cry for help. Its mother did not fail to hear it. With lightning-like speed she leaped through the forest to risk her life to save that of her offspring. In the few seconds while this was happening, an Indian, who was just returning home from his day's labor on an Indian Conservation project, heard the cry of this young creature—saw the mother dash wildly past him, and saw the little rabbit in the coils of a black snake. He stopped and watched. Little did he realize what was to happen. Not wasting a moment's time, or showing any fright, the mother, when she reached her imprisoned baby, jumped upon the snake, and with her strong back legs, toenails extended, she, with uncanny speed, raked at the snake's coiled form. This was for a moment only, for the snake rapidly uncoiled, releasing his prey, and without any delay glided off down the slope, probably lamenting the fact that he had to give up his tender prey. The frightened baby, a moment before in the coils of the snake, now hopped away with its mother, perchance a bit wiser for the narrow escape. The Indian, too, resumed his homeward journey after seeing an almost unbelievable fight by Nature's inhabitants of the forest."

Pet Show

From December 12 to 16, Madison Square Garden in New York will be the scene of a mammoth pet show. Details of the plans for the show can be obtained from E. G. Himmelberger, Westfield, New Jersey.

Brevities

Eight Sundays in colorful October is the unvoiced wish of every outing schedule committee. It would then be possible to grant every leader's request for an October trip. . . . An innovation in leather breeches embodies water-shed bottoms. A spare flap on each leg may be pulled over the boot tops when it rains. A Talon slide fastener simplifies the adjustment detail. As yet untested by department editor. . . . A pardonable joke from the Southern Chiltern Association's (England) bulletin: "Why do you call your dog 'Hiker'?" "Because he goes for tramps." . . . Spokane Mountaineers recently scheduled a Bicycle Jaunt, chiefly over back roads. Machines were rented at 75 cents each. . . . *New Steps* is a mimeographed four-page monthly edited by *The Mystic 13* for the Cleveland Hiking Club. Humorous sidelights on trips and flippant personals. . . . The canopied frame of a sleeping bag produced on the Pacific Coast has a series of pockets, sewed into the back just above the sleeper's head. . . . The pace of a fast leader may be curbed if he contracts a few corns, is the gist of a pseudo-medical note in *The Minnehiker* of Minneapolis. . . . Kim Hart contends in *High Spots* (Adirondack Mountain Club) that huge cairns on mountain tops harbor hornets' nests. Cites seven Adirondack peaks. Three had mighty man-made rock piles tenanted by hornets. Remaining four peaks had neither. Hart is in favor of cairns being reduced to visibility needs. . . . Manchester (England) Ramblers held a *Walkers of the Ages* costume walk as part of an *Access to Mountains* demonstration. British Parliament has such a bill under consideration as a trespassing compromise. Among types participating in this unique walk were the Pilgrim, Roman Courier, Arctic Explorer and Mailman. Idea is adaptable here to a masquerade dance. . . . A compact kitchenette unit for motor touring has a refrigerated compartment which needs icing about every five days. Another firm sponsors a portable refrigerator using dry ice, one block of which is a week's supply. A dry ice service is available through local agencies. . . . NATURE MAGAZINE's hiking articles influenced the Brooklyn (N. Y.) Institute of Arts and Sciences to increase its outdoor activities, formerly confined to botanical trips. On Friday, October 19, Curator James F. Morton, of the Paterson (N. J.) Museum, will lecture on hiking at the Institute. The two following Saturdays Ernest A. Dench will conduct wilderness hikes for Institute members. These all-day Saturday hikes are concessions to the five-day working week.

Convertible Shorts

Hikers and campers partial to shorts out in the wilds are timid about making an exhibition of themselves on busy city streets. One member of the department editors' club hit upon the ingenious plan of buying an odd pair of trousers. He had his tailor cut the trousers midway between the knee and the waist, and fasten a row of snaps where the ends joined. The tailor did such a neat job for a dollar that the joints are not conspicuous. It takes the wearer but a short time to make the transformation, and the vogue is spreading in this club. The first clothing manufacturer to produce these convertible shorts should reap a harvest.

Hiking and Camping Forum

Conducted by
Ernest A. Dench

Inquiries concerning the fields embraced by this department will be answered by mail if a stamped addressed envelope is enclosed. Address the department editor.

Encouraging Women Hikers

We suspect President Frank Place of the Tramp and Trail Club (New York City) as the originator of the term "current ambulatorial year."

A batch of walking books is purchased, and the woman member who accomplishes the greatest mileage over the previous year has the first pick from the pile. It is then the turn of the feminine runner-up (the T. and T. is not a running club, Place reminds us) to dip into the reduced stack of volumes. What's left in reading matter goes to the man who outleads his sex in mileage.

The whistle signals used on T. and T. hikes are given here for the benefit of any other groups which may need such a systematic method of communication in handling the losts and strays: One blast—Where are you?; two short blasts—Here; two long blasts—Come here; three blasts—Come quickly. SOS.

Sierra Club Annual

The annual magazine issue of the *Sierra Club Bulletin* adheres to the high standard of past productions. Noteworthy 1933 Western mountaineering achievements are narrated by the courageous and adventurous doers, whose feats are substantiated by photographs and instructive sketches. The back-of-the-book contents form an interesting miscellany, even though the book reviews are somewhat out of date—a trend an annual cannot avoid. This 110-page magazine sells for 75 cents per copy, from the Sierra Club, 1050 Mills Tower, San Francisco, Calif.

A Craving for Sugar

Late in August four of us used a base camp, about 2,500 feet altitude, in tackling a mountain range, approximately 5,000 feet high. Seven of the major peaks were scaled in four days. Two additional days were consumed on the trail between civilization and the base camp. We felt like Chinese coolies with everything toted on our backs.

Our Commissary-General figured that three pounds of granulated sugar would be sufficient to last the four of us for six days. The bracing air created such a craving for sweet things that the sugar supply was exhausted in three days. Toward the end we were using chocolate to sweeten the coffee,

and jam and chopped dried fruits to improve the plain rice. Another time the C.-G. will provide a daily sugar ration of a quarter pound per person.

Nor were we the exceptions on this trip. The mountain that is the Mecca of all climbers here was sprinkled, near the top, with chocolate bar wrappers and tell-tale tinfoil.

Usually we can climb a minor mountain or two in the morning without snacking en route. These big Adirondack heights proved our undoing every morning, for out a chocolate bar would come, even though lunch was not far distant. And we did justice to both. Sugar, what an energizer you are!

Cumberlands Booklet

The Cumberlands Hiking Club combines walking with Nature study and related subjects. Sunday afternoon trips are scheduled every fortnight. Its terrain is the mountainous country surrounding Chattanooga, Tenn. Most of the trips are led by Robert Sparks Walker, who is also the editor of an illustrated booklet, *Outdoors in the Cumberlands*, which will prove useful to visitors. A quarter will secure a copy from Mr. Walker at 806 Greenwood Ave., Chattanooga, Tenn.

European Camping Groups

The International Federation of Camping Clubs, with London, England, headquarters, is international only in the European sense. No other continents are represented.

The Federation includes thirteen countries, some of which still lack strictly camping clubs. The gap is being temporarily filled by canoeing organizations. Information is exchanged on a variety of subjects, while group and individual visits are returned.

We understand that most of these clubs extend guest privileges or temporary memberships for a small fee. Americans going abroad next spring might find it helpful to communicate this far in advance with the Camping Club of Great Britain and Ireland, which is the world's leading organization of its kind. Address is 2-3 Greville St., London, E.C., 1, England.

A Gypsy Trip

The fourth annual gypsy week-end of the Prairie Club occurred last September in a semi-wild portion of the Valparaiso moraine in Indiana. Automobiles enabled the hiking to be done in instalments. The party did not have to waste precious hours hoofing the dull stretches inseparable from any region. In other words, the party covered the "cream" of the countryside on foot, and left the "skim milk" to the cars. Overnight camp was made at a farm.

Maine's Hiking Season

The Eastern State Mountain Club, Portland, Maine, admits only males to membership. Because of heavy, prolonged snowfall, hiking season opens in May and closes in November. Trips are two weeks apart, as a rule. A *Notice of Proposed Trip* card is mailed to each member a week or so in advance. This printed card, provided with blank spaces for filling in by the secretary, lists the objective, altitude, climbing distance and transportation particulars.

Animal Reasoning

By Frances Bird

Are animals and birds directed by reason or instinct is a much debated question. Perhaps the general opinion is that instinct is their guide, but here are two incidents which would appear to result from more than instinct.

A friend of mine was staying in Germany one year about the time that the storks who had been summering there would make their annual migration to a warmer climate for the winter months—the storks from Germany generally make Africa their winter abode. Just as the sharper weather was coming on which warned them southward one stork in the flock had the misfortune to break his wing and consequently would be unable to fly along with his companions. For days the flock hovered around this afflicted one, by all appearances, as my friend put it, holding a conference. Then one morning, as if a solution to their problem had been reached, one of the group went on each side of the stricken stork, placed one of his wings on each of their backs and flew off with him in company with the rest of the flock.

The other incident took place in Palestine, near a Franciscan Convent in Nazareth. Many of the homes of the poor about there are no more than caves or grottos in the rock. In such a home dwelt a mother and nursing baby. Each morning the mother fed the baby and made him comfortable for a nap in his small bed, then left him while she performed a few of her morning duties. Each time she would be called back by the cries of the child, and on investigating the room could find nothing amiss. Finally one morning she returned, perhaps a little sooner than before in answer to the child's cry, and found a snake tickling the baby under the chin. Tickling the baby thus had made him lose the milk which he had just taken, and as he lost it the snake would drink it up. Otherwise the child was unharmed.

New Yosemite Book

Yosemite Tales and Trails is a large flat volume, an awkward addition to a library shelf holding standard-size books. This format was chosen, apparently, to give freer rein to the many photographic illustrations. In reality, the beautiful photographs by Ansel Adams are wreathed in generous expanses of white space, and could, with a little trimming, easily be reproduced on an ordinary book page. Large type is used for the text.

Katherine Ames Taylor has a versatile style, inasmuch as she has to blend travel description with history and geography, and interpret several Indian legends.

Department readers will find the *Traveling the Trails* chapter genuinely informative. The choice of the two primitive means of locomotion is settled by David Curry's noted advice: "Those of you who walk will probably wish you had ridden, and those of you who ride will wish you had walked."

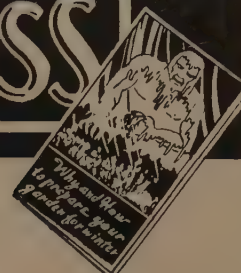
Yosemite's trail pioneer is Gabriel Soulewski, who has hewed 600 miles of paths through the wilderness since 1895. The H. S. Crocker Co., Inc., are the publishers of this \$2.00 book.

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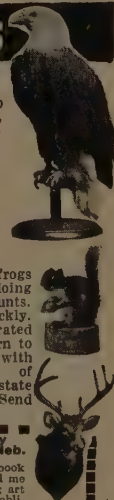
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To Love and to Cherish

By Christine M. Farmer

Whether it was years of experience with nest-robbing squirrels and cats, or whether it was a little bride's determination to have a tight roof over her head, that decided the sprightly pair of robins to build on the drain pipe of our neighbor's eave-trough, will never be known. But build they did, just where the pipe bent in against the wall. It really seemed it must be safe from any interference, and the projection of the roof made an excellent shelter from both sun and rain.

In time came the day when the first little naked baby succeeded with mother's help in breaking through his shell, and he immediately became the center of attention. Back and forth the fond parents flew, each time pausing a moment on the edge of the nest to marvel at the tiny new life that way lying there. On one occasion, both parents sat gazing together, and then each decided that food was the great need of the moment. Taking off at the same time, neither was aware of the tragedy that their going had occasioned. For the nest, which had been so carefully built on that slippery pipe, could not stand the strain, and a moment later, dropped with a sickening thud to the earth. Mother was the first to return. Unable to comprehend what had happened, she cuddled down on the pipe as if expecting to find the nest miraculously under her. Gradually realization must have come to her, for with mouth partly open and wings drooping she sat brooding, finding the cold pipe a poor substitute for the warm nest. On Mr. Robin's return he looked to his wife for an explanation of the queer situation, and then he too realized that some terrible tragedy had taken place, and that Mrs. Robin was feeling if anything worse about it than he. With gentle words he sought to comfort her, but his quiet "tweet, tweet, tweet" brought no response. Again he spoke but still Mrs. Robin remained motionless, beak parted, wings drooping, apparently not even noticing that he was there. Again that sympathetic little "tweet, tweet, tweet," and again no sign of hearing from his pathetic little spouse. Mr. Robin, like the devoted husband he was, saw that in some way he must make her know that he understood, and was there to comfort and help her if that were at all possible. With another "tweet, tweet, tweet" he leaned over and three times rubbed her under the "chin" with his beak. Even this endearment did not arouse the sorrowing mother, and from our window look-out we could almost imagine we saw tears in her eyes. Perhaps, however, there was some slight change of expression noticed by her husband, for his next move was to put his bill crosswise between her still parted one, as if kissing her. Once and again this was done. Then the little mother slowly turned toward him with an almost inaudible "tweet." Thus encouraged, Mr. Robin entered quickly into conversation, and apparently succeeded in persuading his wife that it was still spring, and that he knew of a wonderful building site in a nearby tree where they could begin life anew. At any rate, the two birds presently flew away together, and were not seen again near the eave-trough.

After their departure, we went out to inspect the fallen nest. Three eggs and one dead baby bird were found in it, and it was

put away where it would not serve to remind the little mother of the tragedy she had left behind.

Myrtle, the Turtle

By Walter D. Ebbitt, Jr.

One day as I was walking along the side of a pond, I noticed that the rock in the middle of a pond, which was usually covered with turtles, out to take a sun bath as they usually did, was vacant. I also noticed that there was a great commotion going on in the water near the rock. Dropping everything, I picked up a net and waded out. On reaching and climbing up on the rock I looked down in the water where the commotion was taking place at the time. There I beheld two large turtles engaged in fighting each other so fiercely that I felt sure that if I did not stop it, one would be seriously hurt, so I made a grab for them with my net. One saw me and quickly swam away; the other, however, was caught.

On taking the turtle home I noticed that it was a female. This seemed strange, for a female seldom fights so viciously. I wished that I knew the sex of the other reptile. I put her in a garden pool with a rock in the middle to imitate the original pond. She seemed quite at home and within two weeks she was so tame that she would eat from my hand and come sliding down the side of the rock and swim over to see me.

Every time I fed her I had a white suit on, so now she will come to no one unless they have a white suit on. I do not think that she recognizes my features but she sees the white suit and that is sufficient identification for her. She does not mind being in captivity, for she is with other turtles, but none as intelligent as herself; instead she seems to enjoy the visit.

Birds and the Drought

By Charmian Werner

Because of the drought and the scarcity of food the birds have become very tame here in San Diego, this year. Even right into town they come, close to houses and people in search of something to eat. A saucer of water set out brings an endless stream of birds for a much-needed drink and bath.

Every evening when it begins to cool after the heat of the day, we toss out crumbs from our third floor window. The birds have learned what to expect, and when the sun slowly sinks they arrive in pairs and small groups and wait patiently beneath that window for the first crust of bread. Before it touches the ground at least a couple are after it darting and pecking at it as it falls. As more food tumbles down birds appear from every direction and soon there are a dozen or more fighting, chattering, eating until the lengthening shadows drive them to bed.

Hummingbirds are numerous and come often for a bath, not in the saucer of course but beneath the hose-spray. Nearly every evening when I water I am startled by something darting at me and there, hovering only a couple of feet from my face, is a little hummingbird begging for a bath. I turn the stream into a fine spray and he eagerly dashes into it flying back and forth until he is thoroughly soaked and satisfied.

One evening after he and his fellows had

busily tried to rid a rose-bush of bugs, a little bush-tit decided that he too wanted to bathe. He hopped nearer and nearer to the hose. I turned the spray towards him and after some hesitancy he flew through it and back again, and was gone. This is the first time I have ever seen a bush-tit take a bath in this way.

Formerly we fed the birds on the porch but we stopped this practice. We had set a lemon pie on the porch to cool and when we came to take it in what was our surprise to find the crust pecked away all around the edge and tell-tale linnet tracks through the meringue!

Valuable Pets

By Edna B. Hancock

While calling at the country home of an acquaintance recently, I was highly entertained by a recounting of the assistance in farming rendered by two pet dogs.

Without registered pedigree, a cross between a collie and a German police, they are remarkable. Cooperating perfectly or working independently, these dogs keep all live-stock out of the various fields of vegetation on an unfenced farm. Too, they keep the poultry in its runway. And when the lady of the house desires a fowl for cooking, she singles it out, points to it, bids one of these pets to bring it to her, and he catches and holds, but does not injure it.

The command, "Go and bring up the cows," meets with instantaneous obedience; and they understand when it is changed by a single word; for they drive mules to the barn, and pigs to the pen, as designated.

One goes with their master to the fields; the other remains with their mistress at the house and is her able protector. Both are reliable watch-dogs. Neither, I learned upon inquiry as to the method of training, has ever been whipped. The harshest measure resorted to is a scolding.

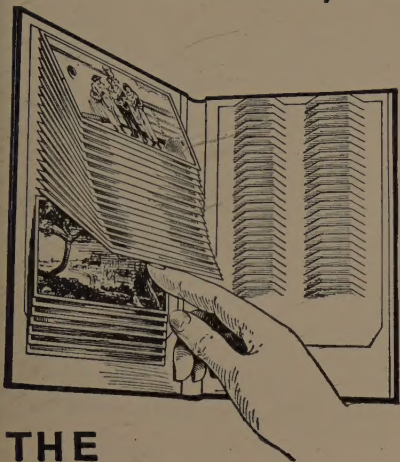
Patient kindness and rewards, not cruelty and punishment, were all that was employed, these good folk said; but I surmise that with these was generously mixed rare humane understanding, a quality which brings certain award whether expressed in one's attitude toward animal or man.

Spawn Carried by Bird Flight

By Louis S. Colwell

"Whence the Little Redfish?" by Mr. Langguth in the September, 1934, issue of NATURE MAGAZINE recalls a conversation the writer had with the late W. H. Parker, Commodore of the Laurentian Club, Lac la Pêche, Que. It was Commodore Parker's observation that land-locked salmon are the same species as the salmon of the Atlantic Seaboard. During spawning season of the salmon, certain ducks and other water-birds feed rather freely on the salmon roe. If frightened, these birds take wing. Their flight may bring them to a land-locked lake; violent exercise causes the gorged birds to become stomach-sick; hence the salmon spawn is transferred to another body of water which becomes stocked. Another observation of Commodore Parker was that wading birds are another medium of transference, carrying the spawn on their feathers and legs.

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A New Book on Fishes

There has just been issued a new book on fish. This latest work is by Alfred Stanford and Gordon C. Aymar and is entitled *Men, Fish and Boats*. Published by Morrow, New York, at \$3.00, its especially noteworthy feature comprises reproductions of 115 action photographs of North Atlantic fishing selected from more than 40,000 negatives in the various collections of fish enthusiasts from Halifax to New York—a pictorial record never before assembled in such convenient and accessible form. It depicts in mass and in detail graphic sequences of various fishing activities such as "hand-lining," "beam-trawling," "seining," and "sword fishing." There are also included photographic reproductions of the great Gloucestermen's ship races, Swampscott dories on the Grand Banks at night, pictures taken in the glare of sunlight, the gloom of fog, and the darkness of fire and shipwreck. Lovers of fish will be fascinated by the fighting sword fish, the prize catches, the depictions of fish under water and on deck, and will marvel at the hardihood of the race of men, the heroism of the individuals, and the independent spirit of all those men who follow the sea. Containing much general information regarding fish, the book is a fascinating one, and will form a welcome contribution to the already extensive literature.

The Civic Annual

When the history of current endeavor for the preservation and restoration of the amenities is written, the most valuable source book will be the *American Civic Annual*, published by the American Civic Association, Union Trust Building, Washington, D. C. Volume Five has just appeared and records the story of civic advance up to date. Briefly, this volume is a collection of specially-written articles by more than seventy-five individuals who are authorities in their respective fields, from national planning to administration of city parks. One interesting and valuable feature of this volume is a compilation of "Who's Who in Civic Achievement." This book should be in the library of everyone engaged in civic endeavor of any kind. It sells for three dollars to the public in general, and is available to members of the American Civic Association desiring extra copies for two dollars.

On Mosses

Students of mosses are continuously in the debt of Dr. A. J. Grout for his work on mosses, which work is reflected in the recent publication of Volume III, Part 4, of *Moss Flora of North America*. In this volume *Leskea* and *Pseudoleskea* are covered by Dr. A. J. Sharp of the University of Tennessee, and *Fontinalaceae* is covered by Dr. Winona H. Welch of DePauw University. We are informed that subscribers to the *Moss Flora of North America* who purchase directly from the author and who will remit five dollars for Vol. III, Part 4, and Vol. II, Part 2 (now in preparation), before November 1, 1934, may obtain for an additional dollar to cover shipping expense a copy of *Mosses with Hand-lens and Microscope* in the original paper covers. This will enable subscribers to have a full set of illustrations. Dr. Grout may be reached at Newfane, Vermont.

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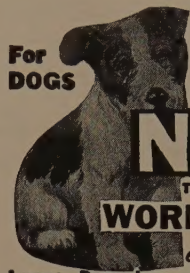
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Quail and Kitten

By Flora Farnsworth

Each morning in May a pair of scaled quail came to feast on back-door crumbs. One morning two kittens were frolicking there, while mother cat basked in the sun nearby. Black kitten ran a yard toward the quail and crouched. One quail approached quite near as though giving a dare. Kitty looked to his mother as though asking advice. Mother cat blinked but did not move. Quail retreated at the movement of kitty's head, but only a foot back, then advanced still nearer. Kitty gained courage or instinct urged a slight raising of the body. Quail retreated two feet, but advanced more cautiously, his mate keeping near but in the background. On the fourth approach the quail made excited little chirps and advanced near enough to attempt a peck as he flew up at kitty's half-spring. The quail retreated to the brush talking excitedly as they walked away side-by-side, heads craned for a backward watch.

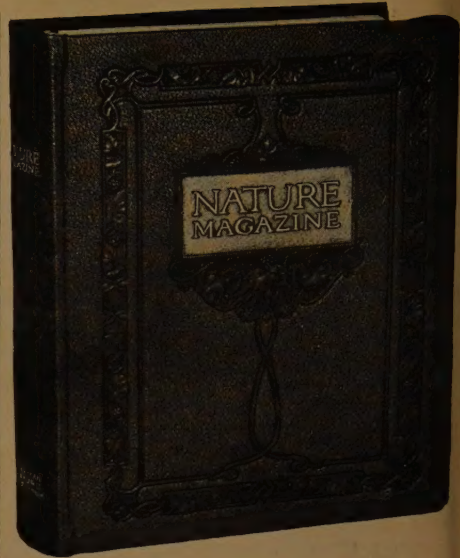
Flicker Language

Our note from W. F. Binderup about the signalling of flickers brought us another observation from Herbert Johnson, the noted cartoonist. He writes that "from the third floor window of my house I heard a long, sharp rat-tat-tat of a woodpecker on the tin roof of the kitchen wing just outside the window. I looked out and saw a flicker hammering away. He stopped and cocked his head in a comical attitude of listening. Then I heard, away off somewhere, a long answering roll from another woodpecker. It sounded as though it came from a patch of woods fully a thousand feet away. After my flicker had heard the answer he did a few grotesque prancing steps like a prize fighter getting ready to haul off and paste his adversary. Then he put his head down and hammered again for dear life. He cocked his head, listened, and the answer came from the distance as before. He repeated the funny little dance, just several grotesque steps without moving from the spot, and repeated the hammering. I was convinced he was signalling and the strangest thing about it to me was the little dance of what may have been exultation and enjoyment, or a challenge, and the almost 'stagey' way in which he cocked his head to listen each time for the reply. This continued for some little time, then he flew away."

A Bird Oasis

By Martha Jane Allaman

Scorching, relentless July heat beat down from a sky of brass. The lawn was burned to a brown desert-like crisp. We noticed birds clinging weakly to tree branches, their mouths wide open, panting for air. We turned on the garden hose to a fine spray under a big maple in the side lawn, not four yards from the house. Almost immediately birds began to congregate to drink and bathe and cool their parched feet. Robins came first and predominated in number. But shortly song sparrows, chipping sparrows, wild canaries, a pair of wrens, two blue jays, brown thrashers, cardinals, a pair of orioles, flickers and grackles had joined the chattering, splashing company. Heat and thirst made a strange and interesting fellowship such as we had never seen gathered together in one small area.



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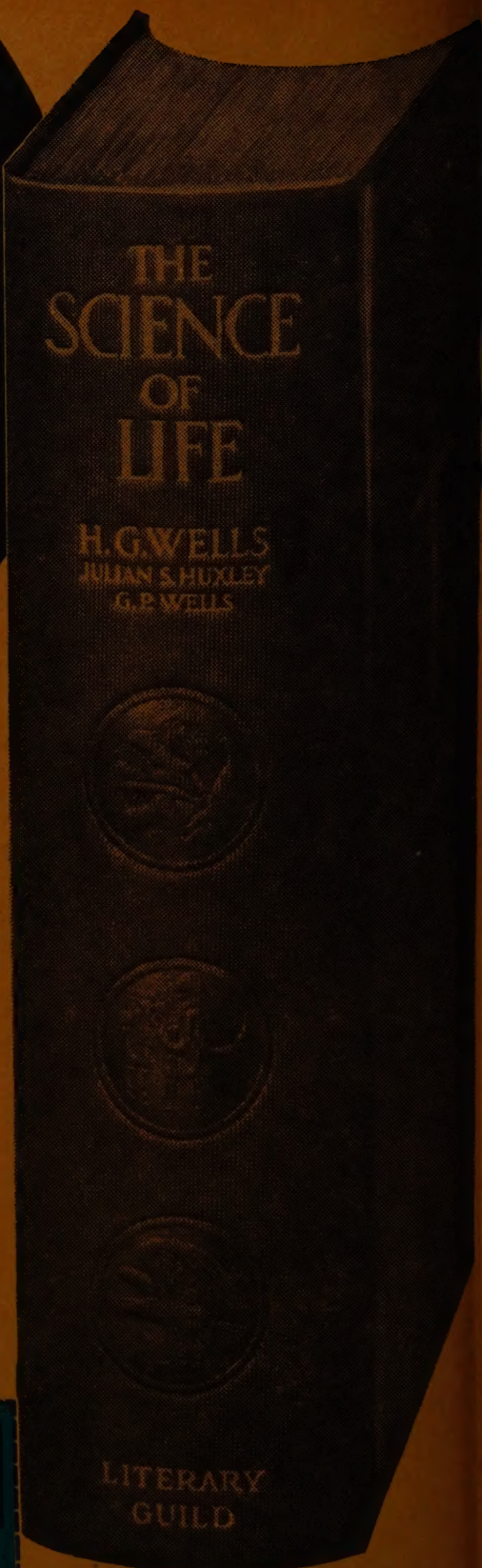
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